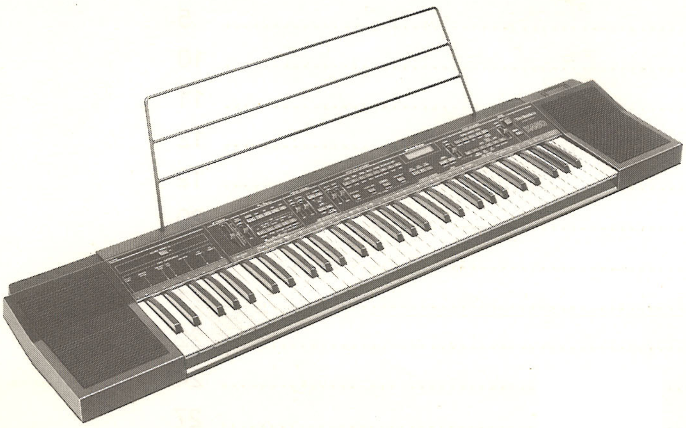
ORDER NO. EMID851129

Service Manual

Keyboard

SX-K450

(EN), (EI), (EH), (EB), (EF), (EZ), (EW), (EL), (EP),
(EK), (MC), (XT), (XL), (XR), (XS), (X), (XX), (XV)



AREAS

(EN):	Norway, Sweden, Denmark
(EI):	Italy
(EH):	Holland
(EB):	Belgium
(EF):	France, Austria
(EZ):	Germany
(EW):	Switzerland
(EL):	Finland
(EP):	Spain
(EK):	the United Kingdom
(MC):	Canada
(XT):	Taiwan
(XL):	New Zealand
(XR):	Australia
(XS):	Malaysia, Singapore, South Africa
(X):	the Middle East, Hong Kong, the Philippines, Indonesia
(XV):	Venezuela, Ecuador, Panama
(XX):	Peru, Chile

Specifications

Keyboard		61 Keys
Fullband Setting Computer		FSC, PS/1, 2~8, 9~16 (PS demo), record *
Play Sequencer		bass, left, right, solo, record *
Voice combinations		FSC, church organ, classical strings, big band brass, funk rock, new wave, mix combo I, mix combo II
Orchestral Conductor		split accomp, poly presets, solo presets
Tones	Poly Presets	string ensemble, jazz organ, full organ, brass, accordion, piano, harpsichord, guitar
	PCM Solo Presets	clarinet, panflute, flute, cosmic, synthe chopper, trombone, saxophone, trumpet, volume
Effects		sustain......on, control, chorus, tremolo, celeste
Techni-chord		○
PCM Drum Percussion	Selectors	march, shuffle, swing, ballad, 8 beat, 16 beat, disco I, disco II, bossa nova, rhumba, samba, cha-cha, tango, jazz waltz, waltz
	Controls	synchro start, start/stop, volume, tempo
Fill-in & Intro		○
Rhythmic Orchestra		I/II, constant, bass volume
Split/Accompaniment		organ, string ensemble, guitar, accomp volume
Auto Play Chord		one finger, fingered, memory, cancel
Program Chord Computer		PCC, cancel, record *,
Transpose		G~[C]~F#
Accomp octave up		○
Musical Display		○
MIDI		set, part select (basic ch), tone message (accomp, poly, solo), clock (int, MIDI), MIDI message (effect, sustain, start/stop, FSC)
Others		power switch, main volume, tune, MIDI terminals (in, out), pedal in jacks (sustain/program, expression), line out jacks (R, L), line out level (high/low), headphones jack, AC cord input, digital memory pack slot
Output		5W×2
Speakers		12 cm (4-23/32″)×2
Power Requirement		54W, AC 120/220/240V, 50/60Hz 54W, AC 120V, 60Hz (North America)
Dimensions (W×H×D)		116.5cm (45-7/8″)×10.3cm(4-1/16″)×27.7cm(10-29/32″)
Net Weight		10.5kg (23.1 lbs.)
Accessories		music rack, dust cover, AC cord

* Common "record" button is used for these buttons.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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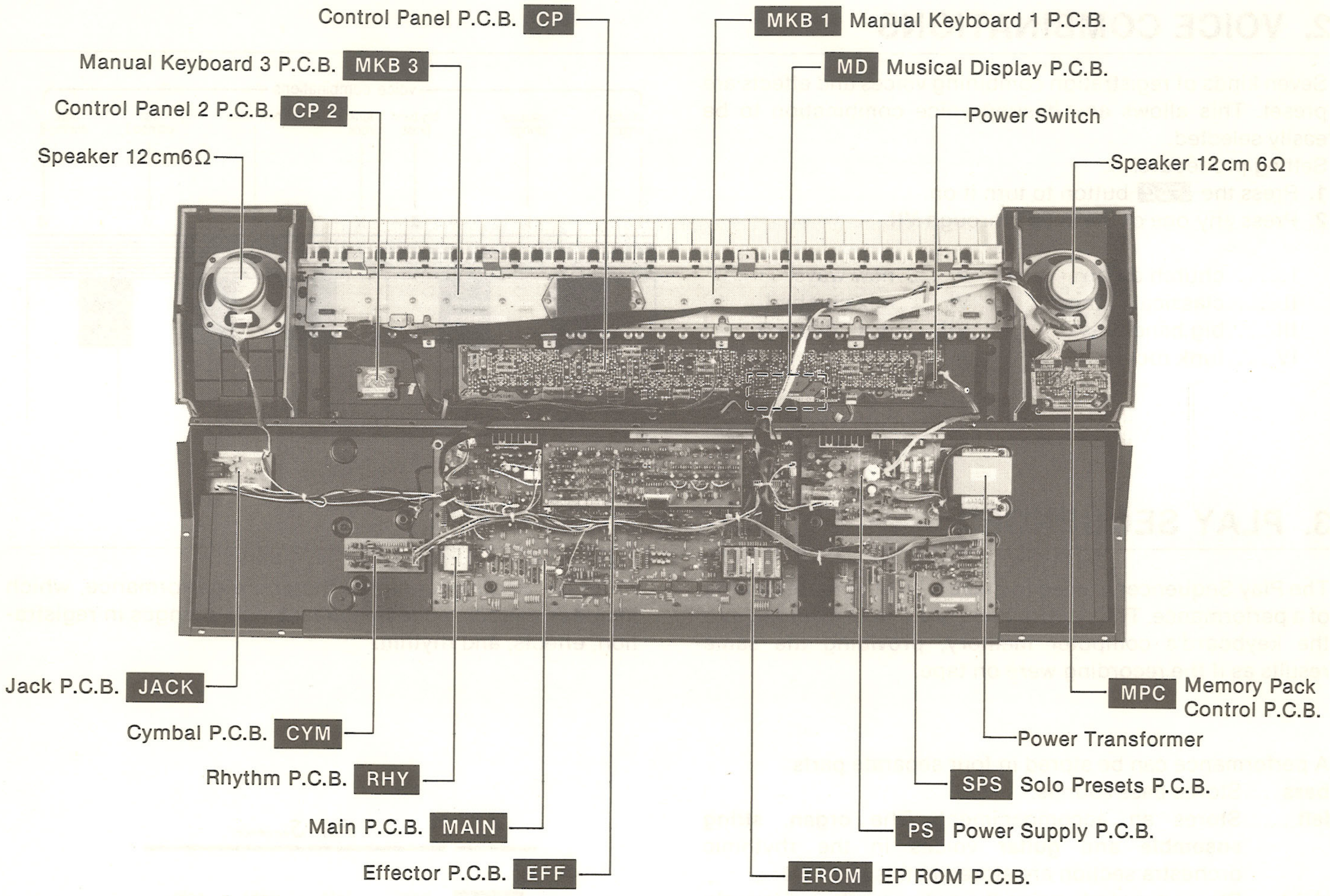
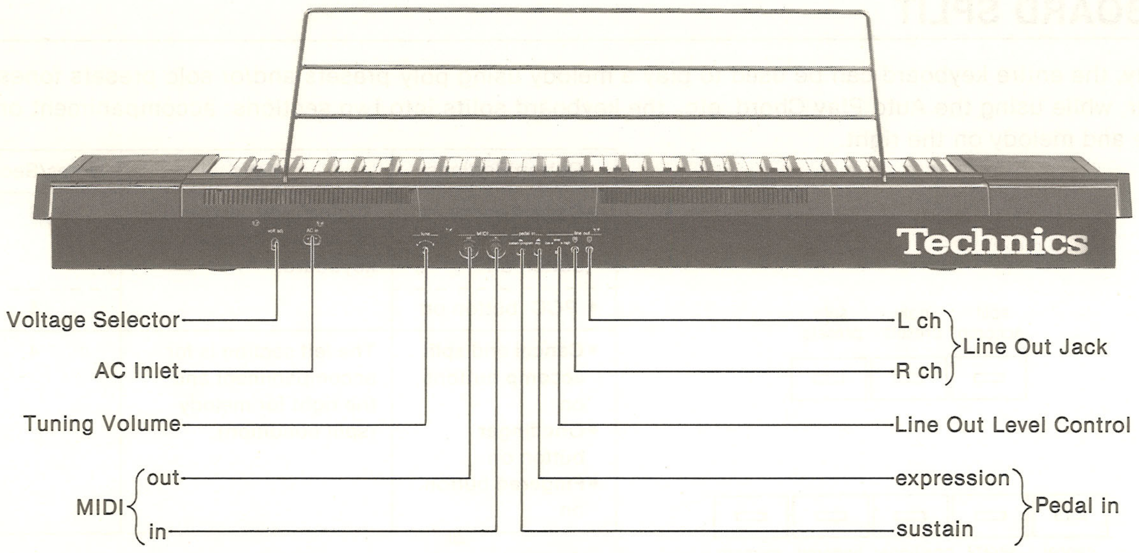
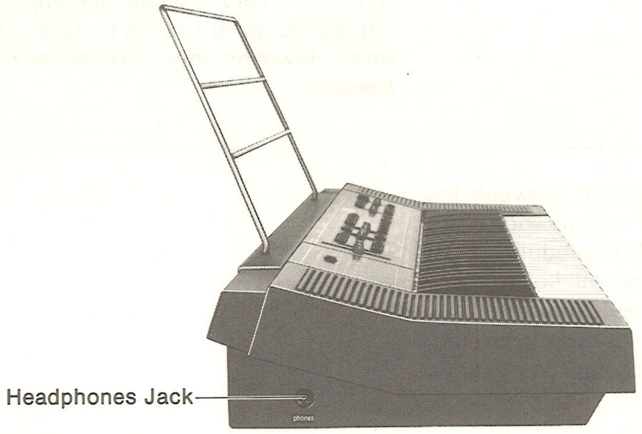
PARTS LOCATION


Control Panel P.C.B. CP
Manual Keyboard 3 P.C.B. MKB 3
Control Panel 2 P.C.B. CP 2
Speaker 12cm6Ω
MKB 1 Manual Keyboard 1 P.C.B.
MD Musical Display P.C.B.
Power Switch
Speaker 12cm 6Ω
Jack P.C.B. JACK
Cymbal P.C.B. CYM
Rhythm P.C.B. RHY
Main P.C.B. MAIN
Effector P.C.B. EFF
MPC Memory Pack Control P.C.B.
Power Transformer
SPS Solo Presets P.C.B.
PS Power Supply P.C.B.
EROM EP ROM P.C.B.

[Photo-1]

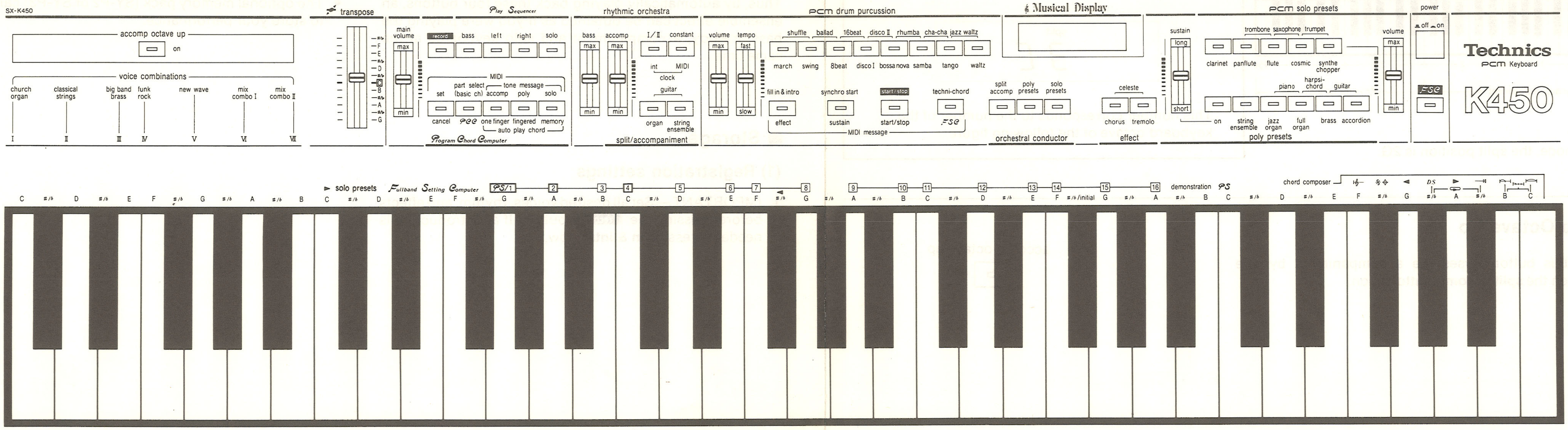

Technics
Voltage Selector
AC Inlet
Tuning Volume
MIDI out
MIDI in
L ch
R ch
Line Out Jack
Line Out Level Control
expression
sustain
Pedal in

[Photo-2]


Headphones Jack

[Photo-3]

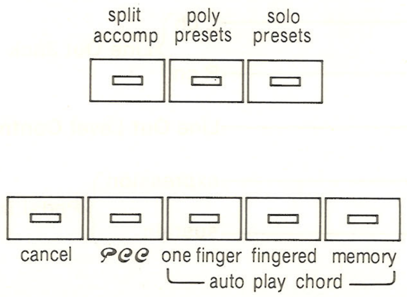
ARRANGEMENT OF CONTROL PANEL


SX-K450
accomp octave up
on
voice combinations
church organ
classical strings
big band brass
funk rock
new wave
mix combo I
mix combo II
I
II
III
IV
V
VI
VII
transpose
Play Sequencer
main volume
max
min
record
bass
left
right
solo
MIDI
set
part select (basic ch)
accomp
tone message
poly
solo
cancel
PCC
one finger
fingered
memory
auto play chord
Program Chord Computer
rhythmic orchestra
bass
accomp
I/II
constant
int
MIDI
clock
guitar
organ
string ensemble
split/accompaniment
volume
tempo
fast
slow
PCM drum purcussion
shuffle
ballad
16beat
disco II
rhumba
cha-cha
jazz waltz
march
swing
8beat
disco I
bossa nova
samba
tango
waltz
fill in & intro
synchro start
start/stop
techni-chord
effect
sustain
start/stop
FSC
MIDI message
Musical Display
split accomp
poly presets
solo presets
orchestral conductor
celeste
chorus
tremolo
effect
sustain
long
short
PCM solo presets
trombone
saxophone
trumpet
clarinet
panflute
flute
cosmic
synthe chopper
piano
harpsi-chord
guitar
on
string ensemble
jazz organ
full organ
brass
accordion
poly presets
volume
power
off on
FSC
Technics
PCM Keyboard
K450
solo presets
Fullband Setting Computer
FS/1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
initial
demonstration
PS
chord composer
DS
C
D
E
F
G
A
B

EXPLANATION OF FUNCTIONS

1. KEYBOARD SPLIT

Normally, the entire keyboard can be used to play a melody using poly presets and/or solo presets tones. However, while using the Auto Play Chord, etc., the keyboard splits into two sections: accompaniment on the left side and melody on the right.

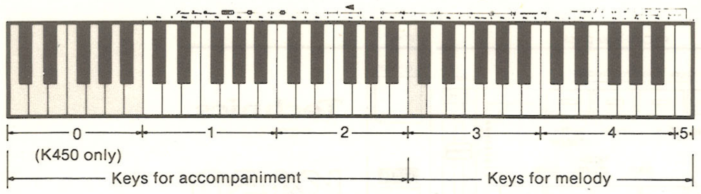


Button Settings	Keys	Notes/Section
• **Cancel** button on and **split accomp** button off	The melody can be played using the entire keyboard.	8
• **PCC** button on		4
• **Cancel** and **split accomp** buttons on • **One finger** button on • **Fingered** button on	The left section is for accompaniment and the right for melody (split condition).	4

- Up to 8 notes can be played at once only when the **cancel** button is on and the **split accomp** button is off. In all other situations, up to 4 notes in each section can be played at once. However, only one note can be played using the **solo presets**.

- The position of the split on the keyboard between the sections for accompaniment (left) and melody (right) can be programmed by using the following procedure.
  1. Press the **record** button. The button will flash.
  2. Press the **split accomp** button. It slowly flashes.
  3. Press the key where you desire the sections to be split. (The key you pressed and those to the right can be used to play melody.)

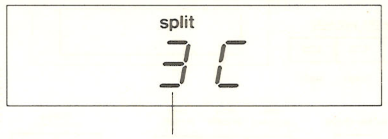
Example: When the C key of octave level 3 is pressed.



In the initial mode, the split position is 2G.

Musical Display

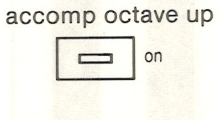
The name of the depressed key and its octave level are displayed.



This number corresponds to the number of the keyboard octave of the following figure.

■ Accomp Octave Up

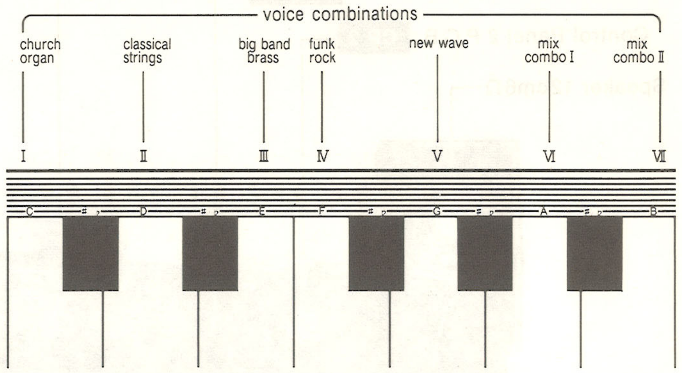
Pressing this button raises the accompaniment by one octave when the **split accomp** button is on.



2. VOICE COMBINATIONS

Seven kinds of registration combining voices and effects are preset. This allows any desired voice combination to be easily selected.
Setting procedure:
1. Press the **FSC** button to turn it on.
2. Press any one of the keys **I** through **VII**.

I......church organ
II.....classical strings
III....big band brass
IV....funk rock
V.....new wave
VI....mix combo I
VII....mix combo II



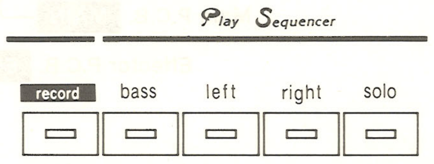
3. PLAY SEQUENCER

The Play Sequencer is used to make a "real time" recording of a performance. The performance is digitally recorded into the keyboard's computer memory, providing the same results as if the recording were on tape.

A performance can be stored in four separate parts:
bass....Stores bass sounds.
left.....Stores an accompaniment. The **organ**, **string ensemble** and **guitar** voices in the rhythmic orchestra section are stored in this section.
right....Stores a melody using the **poly presets** and/or **solo presets**.
solo.......Stores a melody using the **solo presets**.
NOTE: If solo part is to be stored in your performance, the **solo presets** button in the Orchestral Conductor should be turned off during recording of the **right** section.

Thus, by automatically playing back these four buttons, an ensemble effect can be obtained as if you were playing the bass, melody, accompaniment and solo keyboards at the same time.

The Play Sequencer stores the entire performance, which includes melody, accompaniment, and changes in registration, effects, and rhythm.



- The optional memory pack (SY-P2 or SY-P3) can be used to store your performance.

■ Storage

(1) Registration settings

1. IMPORTANT — Set all desired voices, rhythm, and effects before pressing the **record** button. If an introduction is needed, press **fill in & intro** now.

(2) To store each part separately (multiplex storage)

1. Turn off all four **Play Sequencer** buttons.
2. Press the record button. The button will flash.
3. Press the **Play Sequencer** button for the part to be stored first. The button will flash slowly.
4. Play the part to be stored.
5. After playing the part, press the **Play Sequencer** button for the next part to be stored. The button will flash slowly.

- If desired, you can exit the Play Sequencer record mode at this point by pressing either the record button or the PS button for the part that was just stored.
- Check at this time that the button for the previously stored part is still lit.
- If you have exited the record mode then steps 1—4 above must be repeated to store the next part.

6. Pressing the start/stop button begins the automatic performance of the previously stored part(s).

- When adding parts to the previously stored parts, step 6 must be performed to commence recording.
- To begin playback of a song with no rhythm, press the start/stop button.

7. Repeat steps 5 and 6 until all four parts have been recorded.
8. When recording is complete, press the record button to exit the record mode.

- To play back any or all of the stored parts, make sure that the button for that part or parts is lit.
- When each of the four parts is recorded separately, the entire keyboard can be used for each part.

---

(3) Using Auto Play Chord

It is possible to use One-Finger and Fingered modes when recording a Play Sequencer performance.

1. Turn on **one finger** or **fingered** buttons along with **memory** button if desired.
2. Press the record button.
3. Press the Play Sequencer **left** button.
4. Play as described in the Auto Play Chord section.

- In this case both the bass and accompaniment voices are stored in **left**. This is convenient in case extra memory is needed for the **solo** section. (See section on storing two parts together in double mode.)

---

(4) Storing two or more parts together

Two parts may be stored simultaneously. The following combinations are possible:

bass and **right**
bass and **solo**
left and **right**
left and **solo**

In this case the keyboard split function will turn on automatically, so be sure to program the keyboard split position first.

- **Bass** and **left** are played below the split, and **right** and **solo** are played above the split.
- Any other combination is possible. However, **bass** and **left** will be recorded in unison, as will **right** and **solo**.
- When using the combination of **bass** and **left**, or **right** and **solo**, keyboard split will not be activated.
- If three or four parts are recorded simultaneously, the keyboard split function will turn on automatically.

■ To store two parts

The combination of either **bass** or **left**, and **right** or **solo** may be stored as follows:

1. Turn off all four **Play Sequencer** buttons.
2. Press the record button. The button will flash.
3. Press the two **Play Sequencer** buttons you wish to store one at a time.
   The buttons will slowly flash.
4. The keyboard splits into melody and accompaniment sections. Play the two parts at the same time.
5. When finished playing, press the next two **Play Sequencer** buttons you wish to store one at a time. The buttons will slowly flash.
6. Press the start/stop button to begin playback of the previously stored parts.
7. Play the new part while the previously stored parts are playing.
8. Press the record button when finished to exit the record mode.

■ **To record more than two parts simultaneously**

1. Press the **record** button.
2. Press the **Play Sequencer** button for each part you wish to store. The buttons will slowly flash.
3. Play the song to be stored. Some parts will be in unison as previously mentioned.
4. Press the **record** button when finished to exit the record mode.

---

(5) Memory capacities

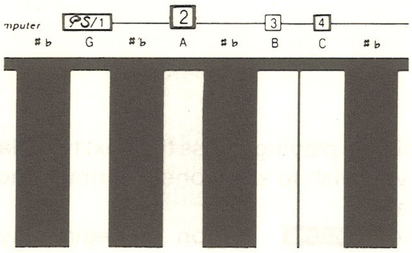
There are three modes available for memory capacity:
NORMAL — allows storage in all four sections.
DOUBLE — storage is possible in up to three sections with increase in note capacity.
QUADRUPLE — storage is possible in only one section but note capacity is greatly increased.

NORMAL — The keyboard is in this mode when it is first turned on. Storage is possible in all parts as previously explained.

DOUBLE — The memory capacities of **left** and **right**, and the memory capacities of **bass** and **solo** can be combined. For example, if recording a song in which a solo voice is not needed, the **solo** section's memory can be combined with the **bass** section's memory. In this mode, recording a solo part is not possible, but the note capacity of the **bass** part doubles. Likewise, the **bass** memory can be eliminated, which in turn doubles the **solo** storage capacity. This is an effective technique when using Auto Play Chord to record a bass part in the **left** section. (See "Using Auto Play Chord" section.) It is also possible to combine the memory capacities of the **left** and **right** sections. As with **bass** and **solo**, eliminating the **left** storage capacity doubles the available notes for the **right** section, and eliminating the **right** storage capacity doubles the available notes for the **left** section.

To enter double mode:

1. Press the **record** button.
2. Press the **Play Sequencer** button for the section you wish to double the memory capacity.
3. Press the **FSC** button to turn it on.
4. Press the white key [2].

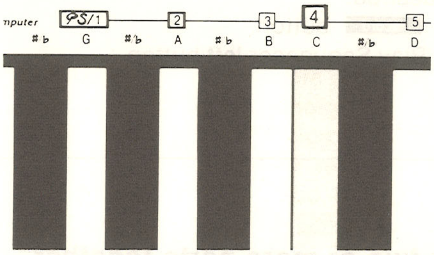


5. Press the **FSC** button again to turn it off.
6. Press **record** to exit record mode.
7. To return to normal mode, follow above procedure except press key [1] in Step 4.

QUADRUPLE — The entire memory capacity of the Play Sequencer can be combined into one section. In this mode, only one section can be recorded. This mode allows the longest possible piece of music to be recorded.

To enter quadruple mode:

1. Press the **record** button.
2. Press the **Play Sequencer** button for the part you wish to store.
3. Press the **FSC** button to turn it on.
4. Press the white key [4].



5. Press the **FSC** button again to turn it off.
6. Press **record** to exit record mode.
7. To return to normal mode, press key [1] in Step 4.

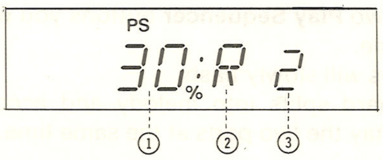
The Musical Display indicates the amount of storage capacity remaining as a percentage, the part which is being stored, and the mode that section is in.

Musical Display

① The remaining storage capacity for the part being stored is displayed as a percentage on the Musical Display. When storing in two **Play Sequencer** buttons simultaneously, the lower of the two percentages is displayed. When 0% appears and the error alarm beeps, storage is not possible.

② R . . . right S . . . solo presets
L . . . left B . . . bass

③ 1 . . . normal mode 2 . . . double mode
4 . . . quadruple mode 0 . . . This part cannot be stored.



- The storage capacity is as shown below:

	left	right	bass	solo	control
Storage in 4 parts (normal mode)	140	140	100	100	**10
Storage in only 2 parts (double mode)	*280		*200		
Storage in only 1 part (quadruple mode)	*480				

*The number of tones that can be stored doubles or quadruples when only two or one part is used as shown above.

During storage using the **right button, control data such as changes in the tones and effects being played can also be stored.

- How to Count the Number of Tones
  The cycle of one key being pressed and released is counted as one tone.
- The rhythm tempo can be freely adjusted during playback Therefore, it is possible to store contents by playing the keyboard slowly.
- If new songs are stored over songs already stored, the previously stored songs are cleared.

---

(6) Registration storage

■ **Registration storage**
When **Play Sequencer** storage operation is performed, the contents set before the record button is pressed are automatically stored.

■ **Checking registration before performance**
Turn on the FSC button and then press PS/1 on the keyboard. The control panel will indicate the beginning registration of the stored performance.

■ **Modifying the beginning registration**
The beginning registration of a performance can be modified while in the Play Sequencer record mode (record and PS buttons flashing slowly).

1. Turn on the FSC button.
2. Change voices, rhythm, and effects as desired.
3. Turn off the FSC button.

■ **Modifying a stored registration**
The beginning registration of a performance stored in Play Sequencer memory can be modified as follows:

1. Set the registration you wish to store.
2. Press the record button. The button will flash.
3. Press the FSC button. The button will flash slowly.
4. Press PS/1 on the keyboard.

■ **Storage of changes in registration during performance**
The **right** button of the **Play Sequencer** stores changes in registration in the buttons on the control panel, excluding the slide controls, **Play Sequencer**, and FSC buttons. This information is stored along with the information for the right part.

(7) To modify previously stored parts or add a solo part

1. Turn on the **Play Sequencer** button for the part to be automatically played.
2. Press the record button. The button will flash slowly.
3. Press the **Play Sequencer** button for the part to be replaced. The button will flash slowly.
- Check at this time that the button for the part to be automatically played is still lit.

4. Pressing the start/stop button begins automatic performance of the stored part to which a new part is being added.
- You can also begin a song which has no rhythm by pressing the start/stop button.

5. After playing, press the record button to turn it off.

■ For Automatic Performance of the Stored Contents

- To use the stored tones and effects, turn on the FSC button and then press the PS/1 key on the keyboard.

1. Press the **Play Sequencer** button to turn on the part you wish to perform automatically.
- Make sure that only the **Play Sequencer** button for the part you wish to perform automatically is lit. (If the **Play Sequencer** button for any other part is turned on, the wrong melody may be played or the rhythm may stop during performance.)
- If the **solo presets** button of the Orchestral Conductor is turned on during automatic performance of the melody stored in the **solo** part of the **Play Sequencer** button, manually played voices will also be produced. This may adversely affect the **solo presets**.

2. Start the rhythm for automatic performance of the selected part.
- Press the start/stop button to begin a song which has no rhythm.

■ Using Play Sequencer and PCC together

The contents of the Play Sequencer (PS) and Program Chord Computer (PCC) can be combined. It is possible to add a melody to a PCC chord progression. It is also possible to alter one part of the PCC by replacing it with a Play Sequencer recording.

It is first important to understand that the Play Sequencer has priority over Program Chord Computer. The accompaniment played back by the PCC is actually the bass and left sections being automatically played by the keyboard's computer.

Therefore, as an example, if the PS **bass** button is flashing (record mode) or on (playback mode), then the bass notes will not be heard when playing back the PCC accompaniment. Only the accompaniment (left) section is heard. Conversely, if the PS **left** button is on or flashing, then the PCC will play back only the bass notes. If both the **bass** and **left** PS buttons are on or flashing, then chords stored in the PCC will not be heard.

(1) Adding a melody to a PCC accompaniment

Record or playback of the **right** and **solo** sections of the Play Sequencer does not affect PCC. Therefore the PCC can provide an accompaniment while you record a melody.

■ To add a melody to PCC:

1. Record a chord progression into the PCC.
2. Press record (Be sure the PCC button is turned on first.)
3. Press the **right** or **solo** PS button. The button will flash slowly.
4. Press the start/stop button to begin PCC playback.
5. Play the part to be recorded.
6. When the song is completed, press the record button to exit the record mode.

- Parts can be stored in both the **right** and **solo** sections. In this case, make sure that the **solo presets** button in the Orchestral Conductor is turned off while recording the **right** part.
- If the Play Sequencer **bass** and **left** buttons are turned on, those parts will not be played back by the PCC, since Play Sequencer has priority over Program Chord Computer.
- When playing back a performance recorded in this fashion, the PCC, **right**, and/or **solo** buttons must be turned on.

(2) Altering a PCC accompaniment

A PCC accompaniment consists of two parts, bass and accompaniment (left). As an example, you might want to add your own bass part to an existing PCC accompaniment. This is accomplished as follows:

1. Record a chord progression in PCC in the normal fashion.
2. Press record.
3. Press the PS **bass** button. The light will slowly flash.
4. Press the start/stop button to begin playback of the PCC chord progression.
5. As soon as PCC playback begins, play the new **bass** part on the keyboard.
6. When the performance is completed, press record to exit record mode.

- The accompaniment (left) section can be changed the same way. Just press the PS **left** button in Step 3. The rest of the procedure is the same.
- When changing the accompaniment section, be sure to first select one of the three accompaniment voices (**organ**, **string ensemble** or **guitar**).
- To play back a PCC accompaniment which has been changed by this method, both the PCC button and the PS button for the part that has been changed must be turned on.
- **Right** and **solo** sections can be added as previously explained.

4. MEMORY PACK

- With model K350/K450, you can store and preserve the contents of the Play Sequencer or the Fullband Setting Computer.
- By switching the mode selector on the memory pack, storage is possible in either of the following two modes.

Mode	Contents that can be stored
FSC mode FSC ▮□ PS	One song using the Play Sequencer and registrations for 7 songs
PS mode FSC □▮ PS	One long song using the Play Sequencer

- If new songs are stored over songs already stored in the memory pack, the previously stored songs are cleared. If you wish to keep the stored songs, turn **on** the **memory protector**.

- The storage capacity is as shown below.

		SY-P2					SY-P3				
		left	right	bass	solo	con-trol	left	right	bass	solo	con-trol
FSC mode	Storage in 4 parts (normal mode)	180	180	140	140	20	450	450	350	350	40
	Storage in only 2 parts (double mode)	360		280			900		700		
	Storage in only 1 part (quadruple mode)	640					1600				
PS mode	Storage in 4 parts (normal mode)	250	250	200	200	20	550	550	400	400	40
	Storage in only 2 parts (double mode)	500		400			1100		800		
	Storage in only 1 part (quadruple mode)	900					1900				

Precautions

- ■ The memory pack allows storage of your performance in either the **PS** mode or the **FSC** mode.
- ■ To perform the stored contents, be sure to use the mode in which they were stored.
  - When the other mode is used, either the stored contents cannot be performed or the keyboard may not operate properly.

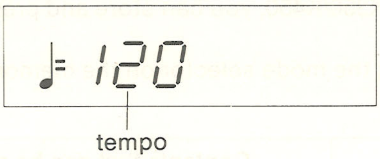
    When the organ does not operate properly:

    1. Press the **FSC** button to turn it on.
    2. Press the **initial** key.

5. MUSICAL DISPLAY

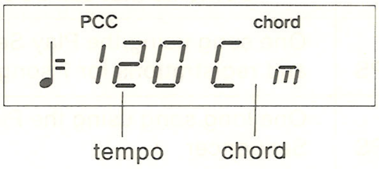
I. Display of musical contents

a) During Manual Play:
Only the tempo is displayed.



b) During Auto Play Chord, Program Chord Computer or split play:
The tempo and chord are displayed.

- Chord names C♯, D♯, G♭, G♯, and A♯ are displayed as D♭, E♭, F♯, A♭ and B♭, respectively.



II. Display of stored contents

■ Program Chord Computer

Musical Display

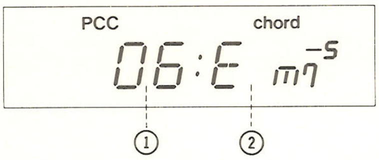
It's possible to store these types of chords:

Major	Minor	Seventh	Minor Seventh	Augmented	Diminished	Minor Seventh Flat Fifth	Major Seventh	Minor Major Seventh	Seventh Suspended Fourth
C	Cm	C7	Cm7	Caug	C° or C dim.	C^ϕ or Cm7 (♭5)	CM7 or C maj. 7	CmM7	C7sus4
C	C m	C 7	C m7	C A	C d	C m7 -5	C M7	C mM7	C 7S

- Storing Chords in the Computer.

Musical Display

The sequence number and chord name are displayed.



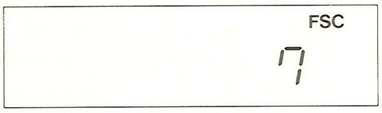
① Sequence number
② Chord name

Keys *D.S.*, 𝄋⊕ and ⊣| are displayed as d, S and E respectively. Pressing the *D.S.* key and ⊣| key simultaneously displays r.

■ Fullband Setting Computer

Musical Display

The selected number is displayed only when the FSC button is on.



- Err will be displayed if the operator improperly operates the keyboard, such as trying to store data to FSC 9~16 (PS demo).
- When the optional memory pack is used, the type of the memory pack will also be displayed.

SY-P2. . . P2 SY-P3. . . P3

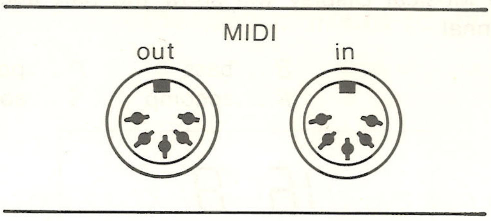
* As for other display movement.
Please refering explanation of each functions.

6. MIDI TERMINALS

MIDI (Musical Instrument Digital Interface) is a standard specifying the hardware and basic data format for communication between equipment such as synthesizers, drum machines, sequencers and computers.

The SX-K300, SX-K350 and SX-K450 are capable of data transmission and reception with equipment provided with a MIDI standard interface.

- Use a standard MIDI cable (5-pin DIN male plug, each end on a cable less that 15 meters [50 feet] long) for these connections.
- Do not use DIN to RCA adaptor cables. These cables could cause interference and damage.



in: The terminal that receives data from external equipment.

out: The terminal that transmits data from the keyboard to external equipment.

■ MIDI Mode Selection

This instrument operates in the OMNI OFF Poly mode (MIDI Mode 3), so Note On/Off messages are received only on the channels on which they were transmitted.

When the keyboard is initialized the MIDI Basic Channels are assigned as follows.

Channel	Part	Data transmitted/received
1	Poly	Tone, effect, sustain, poly presets voices
2	Accomp	Tone, rhythmic orchestra voice
3	Bass	Tone
4	Solo (K350/K450 only)	Tone, solo presets voices

The channels on the transmitting side and the receiving side must match before any MIDI data can be communicated. MIDI provides 16 Basic Channels, on this keyboard, each of the Parts can be assigned to any MIDI Basic Channel.

- Note that multiple parts within the SX-K300/K350/K450 cannot be assigned to the same basic channel.

- **Voice, Effect, Sustain, Start/Stop, and FSC Number data**
  Whether or not the data for each of these items is transmitted or received can be set. When the keyboard is initialized these data are set to be transmitted or received.

- **Clock Selection**
  The internal clock (**int**) is used when playing along with the PCM Drum Percussion or the Program Chord Computer. When using an external drum machine, such as the Technics SY-DP50, or a second SX-K300/350/K450 keyboard, select the **MIDI clock** and the performance will be synchronized to the external equipment.

- Note: When using the **MIDI clock** the start/stop button on the keyboard is not functional.

■ MIDI Mode Setting

1. Press the record button.
2. Press the **MIDI set** button.
3. Set the necessary MIDI function.

   ■ Basic Channel Assignment

   a) Press the **part select** button, the basic channel and part will appear in the Musical Display. Each time the button is pressed the next part and channel number will appear.

   b) When the part to be assigned appears in the Musical Display press one of the keys from 1 to 16 to select that channel.

   - If you get an error tone then that channel is already assigned to another part and one of them must be reassigned.
   - Do not assign the **bass** or **solo** parts to Basic Channels in your MIDI system which contain polyphonic data as these are monophonic parts and will not respond properly to polyphonic data.

   ■ Clock Selection

   The lighted LED indicates the selected internal or MIDI clock set as required in your MIDI system.

   - Remember selecting the **MIDI clock** disables the start/stop button.
     The Musical Display will show dashes (♩=---) where the tempo is displayed.

   ■ Voice, Effect, Sustain, Start/Stop, FSC Number

   If the LED on these buttons are lighted then the data is set to be transmitted or received. To cancel these messages press the button to turn off the LED.

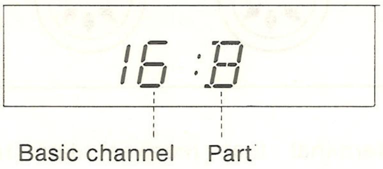
4. After making your selections press the record button to turn it off and lock in the selections.

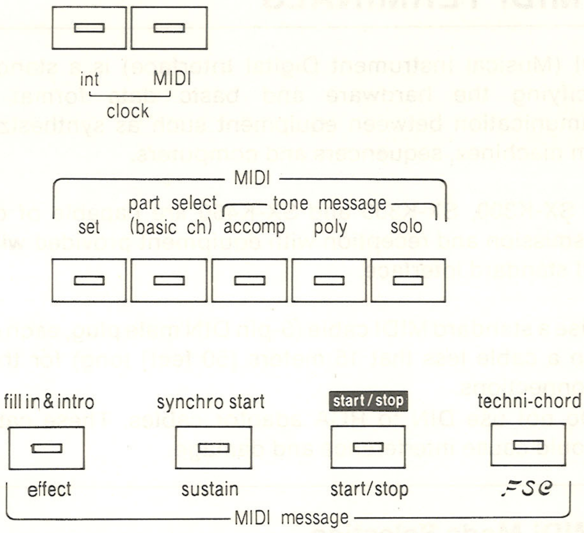
- When the power to this instrument is turned off and then on again, the clock is set to the internal mode (**int**). All information except the clock remains the same as it was before the power was turned off.

Musical Display

- The Musical Display will show the part and basic channel.

B ...bass	P ...poly
A ...accomp	S ...solo





■ The following data can be received.

[Connect the **in** terminal of the keyboard to the **out** terminal of the external equipment.]

- **Keyboard On/Off Data of External Equipment**
  The sound for this instrument can be heard by playing the external equipment.
- **Tone Data**
  The tone for this instrument can be selected by operating the external equipment.
- **MIDI Clock Signal**
  You can play the keyboard in synchronization with the clock on the external equipment (clock **MIDI** mode).
- **Effect Data, Sustain Data**
  The effect and sustain for this instrument can be controlled by operating the external equipment.
- **Start/Stop Data**
  You can start and stop the drum percussion and Program Chord Computer from the external equipment. (In this case Play Sequencer or **PS** demo cannot be started.)
- **FSC (when loading) Number**
  By operating the external equipment, the FSC for this instrument can be selected.

■ The following types of data can be transmitted.

[Connect the **out** terminal of the keyboard to the **in** terminal of the external equipment.]

- **Keyboard On/Off Data**
  The sound from the external equipment can be heard by playing this instrument.
- **Tone Data**
  The tone for the external equipment can be selected by operating the tone buttons for this instrument.
- **Internal Clock Signal**
  You can synchronize the external equipment with the keyboard (clock **int** mode).
- **Effect Data, Sustain Data**
  The effect and sustain of the external equipment can be controlled by operating the **effect** and **sustain** buttons for this instrument.
- **Start/Stop Data**
  You can start and stop the external equipment from the keyboard.
- **FSC (when loading) Number**
  The song of the external equipment can be selected by loading the FSC for this instrument.

- These data cannot be received by some equipment.
- When connected to equipment that has a hold function, the keyboard **sustain on** button will work with this function to hold a note indefinitely.

- If the **split accomp** function is not selected during MIDI operation then data on the Accompaniment basic channel is ignored.
- If the FSC function is enabled in a system with another SX-K300/K350/K450 then using the initialize sequence (FSC then initialize) will initialize both keyboards.

- Care must be used when sending Voice Select signals over a MIDI system. These messages are not standardized and may produce unwanted results in other keyboards.

- When using Transpose function only the sound of the SX-K300/K350/K450 will be affected. The transmitted data will be key played information only.

For further information on MIDI data, etc., refer to the Implementation Chart and Data Format.

[**SX-K300/SX-K350/SX-K450**]

MIDI Implementation Chart

(Transmitted)

Function...		poly	accomp	bass	solo (K350/K450)	Remarks
Basic	Default	1	2	3	4	
		1~16	1~16	1~16	1~16	initialized
Channel	Changed	1~16	1~16	1~16	1~16	memorized
Mode	Default	3	3	3	3	OMNI OFF POLY Mode
	Messages	×	×	×	×	
	Altered	—	—	—	—	
Note		48~96	60~108	24~72	48~96	(K300/K350)
		36~96	**48~119	24~84	36~96	(K450)
Number	True voice	—	—	—	—	
Velocity	Note ON	×	×	×	×	
	Note OFF	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	
After	Key's	×	×	×	×	
Touch	Ch's	×	×	×	×	
Pitch Bender		×	×	×	×	
Control	64	*○ ×	×	×	×	sustain
	92	*○ ×	×	×	×	tremolo (K350/K450)
	93	*○ ×	×	×	×	chorus
Change	94	*○ ×	×	×	×	celeste (K350/K450)
Prog		*○ (0~7) ×	*○ (0~1) K300 (0~2) K350/K450 ×	×	*○ (0~7) ×	
Change	True #	—	—	—	—	
System Exclusive		×				
System	Song Pos	×				
	Song Sel	*○ (0~15, 20) ×				
Common	Tune	×				
System	Clock	○				
Real Time	Commands	*○ ×				
Aux	Local ON/OFF	×	×	×	×	
	All Notes OFF	○	○	○	○	
Messages	Active Sense	×	×	×	×	
	Reset	×	×	×	×	
Notes		*○ × .... Whether or not the data for each of these items is transmitted can be set. ** Changes depending on the state of the "accomp octave up" button.				

Mode 1:	OMNI ON,	POLY	**Mode 2:**	OMNI ON,	MONO
Mode 3:	OMNI OFF,	POLY	**Mode 4:**	OMNI OFF,	MONO

○ : Yes
× : No

[SX-K300/SX-K350/SX-K450]

MIDI Implementation Chart

(Recognized)

Function...		poly	accomp	bass	solo (K350/K450)	Remarks
Basic Channel	Default	1 1~16	2 1~16	3 1~16	4 1~16	initialized memorized
	Changed	1~16	1~16	1~16	1~16	
Mode	Default	3	3	3	3	OMNI OFF POLY Mode
	Messages	×	×	×	×	
	Altered	———	———	———	———	
Note Number		30~119	30~119	24~119	42~112	Changes depending on the position of the Transpose slide control
	True voice	36~119	36~119	24~119	48~107	
Velocity	Note ON	×	×	×	×	
	Note OFF	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	× (9nH:V=0)	
After Touch	Key's	×	×	×	×	
	Ch's	×	×	×	×	
Pitch Bender		×	×	×	×	
Control Change	64	*○ ×	×	×	×	sustain
	92	*○ ×	×	×	×	tremolo (K350/K450)
	93	*○ ×	×	×	×	chorus
	94	*○ ×	×	×	×	celeste (K350/K450)
Prog Change		*○ (0~7) ×	*○ (0~1) K300 (0~2) K350/K450 ×	×	*○ (0~7) ×	
	True #	0~7	0~1 K300 0~2 K350/K450		0~7	
System Exclusive		×				
System Common	Song Pos	×				
	Song Sel	*○ (0~15, 20) ×				
	Tune	×				
System Real Time	Clock	○				
	Commands	*○ ×				
Aux Messages	Local ON/OFF	×	×	×	×	
	All Notes OFF	○	○	○	○	(123~127)
	Active Sense	×	×	×	×	
	Reset	×	×	×	×	
Notes		*○ × .... Whether or not the data for each of these items is received can be set.				

Mode 1:	OMNI ON,	POLY	**Mode 2:**	OMNI ON,	MONO	○ : Yes
Mode 3:	OMNI OFF,	POLY	**Mode 4:**	OMNI OFF,	MONO	× : No

- This product adheres to MIDI specification as published by the Japan MIDI Association.

MIDI Data Format

1. TRANSMITTED DATA

<table>
<tr><th rowspan="2">STATUS</th><th colspan="2">DATA</th><th rowspan="2"></th><th rowspan="2">Description</th></tr>
<tr><th>1st</th><th>2nd</th></tr>
<tr><td>1001nnnn</td><td>0kkkkkkk</td><td>0vvvvvvv</td><td>Note On/Off</td><td>● Channel Number n = 0~15 (ch = 1~16)
● Note Number
<table>
<tr><th></th><th>K300/K350</th><th>K450</th></tr>
<tr><td>poly</td><td>k = 48~96</td><td>k = 36~96</td></tr>
<tr><td>accomp</td><td>k = 60~108</td><td>k = 48~119</td></tr>
<tr><td>bass</td><td>k = 24~72</td><td>k = 24~84</td></tr>
<tr><td>solo</td><td>k = 48~96
(K350 only)</td><td>k = 36~96</td></tr>
</table>
● Note Velocity v = 0: Note Off
v = 64: Note On</td></tr>
<tr><td>1011nnnn</td><td>0ccccccc</td><td>0vvvvvvv</td><td>Control Change</td><td>● Channel Number n = 0~15 (ch = 1~16)
● Control Number
c = 64 Sustain
c = 92 Tremolo (K350/K450)
c = 93 Chorus
c = 94 Celeste (K350/K450)
● Control Value v = 0: Off
v = 127: On</td></tr>
<tr><td>1100nnnn</td><td>0ppppppp</td><td>——</td><td>Program Change</td><td>● Channel Number n = 0~15 (ch = 1~16)
● Program Number p = 0~7 (Refer to Note 1)</td></tr>
<tr><td>1011nnnn</td><td>0ccccccc</td><td>0vvvvvvv</td><td>All Notes Off
(Mode Message)</td><td>● Channel Number n = 0 (ch = 1)
● c=123 v=0 All Notes Off</td></tr>
<tr><td>11110011</td><td>0sssssss</td><td></td><td>Song Select</td><td>(Refer to Note 2)</td></tr>
<tr><td>11111000</td><td></td><td></td><td>Clock</td><td>Transmitted only when int. clock is selected.</td></tr>
<tr><td>11111010</td><td></td><td></td><td>Start</td><td></td></tr>
<tr><td>11111100</td><td></td><td></td><td>Stop</td><td></td></tr>
</table>

2. RECOGNIZED RECEIVE DATA

STATUS	DATA		Description	
	1st	2nd		
1000nnnn	0kkkkkkk	0vvvvvvv	Note Off	● Channel Number n = 0~15 (ch = 1~16) ● Key Number poly k = 29~119 accomp k = 29~119 bass k = 24~119 solo k = 42~112 (K350/K450) (Changes depending on the transpose position.) ● Key Off Velocity v: ignored
1001nnnn	0kkkkkkk	0vvvvvvv	Note On/Off	● Channel Number n = 0~15 (ch = 1~16) ● Key Number poly k = 29~119 accomp k = 29~119 bass k = 24~119 solo k = 42~112 (K350/K450) (Changes depending on the transpose position.) ● Key Velocity k = 0 (Key Off) k = 1~127 (Key On)
1011nnnn	0ccccccc	0vvvvvvv	Control Change	● Channel Number n = 0~15 (ch = 1~16) ● Control Number c = 64 Sustain c = 92 Tremolo (K350/K450) c = 93 Chorus c = 94 Celeste (K350/K450) ● Control Value v = 0: Off v = 127: On
1100nnnn	0ppppppp	—	Program Change	● Channel Number ① n = 0 (ch = 1) ② n = 0~15 (ch = 1~16) ● Program Number p = 0~7 (Refer to Note 1)
1011nnnn	0ccccccc	0vvvvvvv	Mode messages	● Channel Number n = 0 (ch = 1) ● c / v 123 / 0 / All Notes Off 124 / 0 / OMNI Mode Off (All Notes Off) 125 / 0 / OMNI Mode On (All Notes Off) 126 / ignored / Mono Mode On (All Notes Off) 127 / 0 / Poly Mode On (All Notes Off) (Refer to Note 3)
11110011	0sssssss		Song Select	(Refer to Note 3)
11111000			Clock	(Refer to Note 4)
11111010			Start	
11111100			Stop	

Notes

1.

P	poly	accomp	solo (K350/K450)
0	string ensemble	string ensemble (K350/K450)	clarinet
1	jazz organ	guitar (K350/K450)	panflute
2	piano	organ	trombone
3	full organ	—	flute
4	harpsi chord	—	saxophone
5	brass	—	cosmic
6	guitar	—	trumpet
7	accordion	—	synthe chopper

2.

sssssss	● internal RAM ● SY-P2/SY-P3 FSC mode (K350/K450)	● SY-P2/SY-P3 PS mode (K350/K450)
0	FSC 1	FSC 1
1	2	—
2	3	—
3	4	—
4	5	—
5	6	—
6	7	—
7	8	—
8	9	FSC 9
9	10	10
10	11	11
11	12	12
12	13	13
13	14	14
14	15	15
15	16	16
20	FSC initial	FSC initial

The Song Select signal is transmitted by loading the FSC number when the rhythm stops.

The Song Select signal is recognized only when the rhythm stops so that a FSC number can be loaded.

3. When received, each mode message is recognized as ALL NOTES OFF. (The mode does not change.)

4. When selected, the internal clock synchronizes with the tempo timing clock of the equipment.
When selected, the MIDI clock synchronizes with the timing clock received from the external equipment.

This instrument will only run in the OMNI OFF Poly mode (mode 3), so the Note on/off message is received only on the channel number that matches the basic channel.

PRECAUTIONS BEFORE SERVICING

The following symptoms may take place in this unit, but it is not a sign of trouble.
Please check the instrument before repair.

Phenomenon	Remedy
The accompaniment or melody cannot be played in the split mode (K350/K450).	On the K350/K450, the split position can be freely set, but when set too far to the right or left, the accompaniment or melody cannot be played. If this should happen, set it in a more suitable position.
A rhythm does not start or no rhythm sounds.	•If the PCC button has no stored chords, no rhythm will start when turned on. Press the **cancel** button. •The rhythm will not start for tunes that do not use a rhythm when the stored Play Sequencer button is on.
The rhythm does not start when the start/stop button is pressed. (The tempo indication in the Musical Display is ♩= ---.)	When the clock mode is set to **MIDI** and a MIDI clock is not being received from an external instrument, the rhythm will not start. Set the clock mode to the **int** position.
Synchro start does not function.	Synchro start functions only when the keys in the accompaniment section are pressed. When the **cancel** button is on and the **split accomp** button off, when the Program Chord Computer is playing back, or when storing in either or both the **right** and **solo** buttons of the Play Sequencer, all of the keys play only the melody part and synchro start will not function.
The contents of the Program Chord Computer, Fullband Setting Computer, etc. cannot be stored.	After pressing the record button, depress the necessary buttons within 5 seconds. The record button turns off after a lapse of 5 seconds, making storage operation impossible. Press the record button again.
Storage is not possible with the Program Chord Computer.	•Check that the PCC button is slowly flashing. Pressing the **one finger** or **fingered** button turns off the record button, making storage operation impossible. •Do not release the left hand (chord designation) before pressing the measure keys (⊢⌒⊣ , ⊢┼⊣ , and ⊢┼┼┼).
The stored registration cannot be used when performance is started with the Play Sequencer button turned on.	To use the stored registration, turn on the FSC button and then press the PS/1 key on the keyboard.
The stored introduction is not reproduced during automatic performance.	•Set the beginning of a song, such as an introduction before turning on the record button. •To add an introduction after the record button and Play Sequencer button flash, set it after turning on the FSC button. Then turn off the FSC button.
No storage is possible even when the record button and Play Sequencer button are slowly flashing.	•No storage is possible when the FSC button is turned on. Turn it off before playing. •If any Play Sequencer button is lit, press the start/stop button for automatic performance of the stored part. Another part can then be stored. (K350/K450)
The quick rhythm tempo is delayed when the Play Sequencer is used.	This occurs when too many tones are played at one time. Slow down the tempo (to about ♩ = 250) or reduce the number of tones played at a time.
The cabinet becomes heated to some degree.	The Technics keyboard has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.
The buttons, keyboards, etc. malfunction.	•Press the FSC button first to turn it on and then depress the **initial** key. •If the buttons, keyboard, etc. do not return to normal, turn the **power** switch off once, then turn on again.

DISASSEMBLY INSTRUCTIONS

1. How to remove the cabinet

a) Remove the 16 setscrews Ⓐ and 6 setscrews Ⓑ on the bottom board.

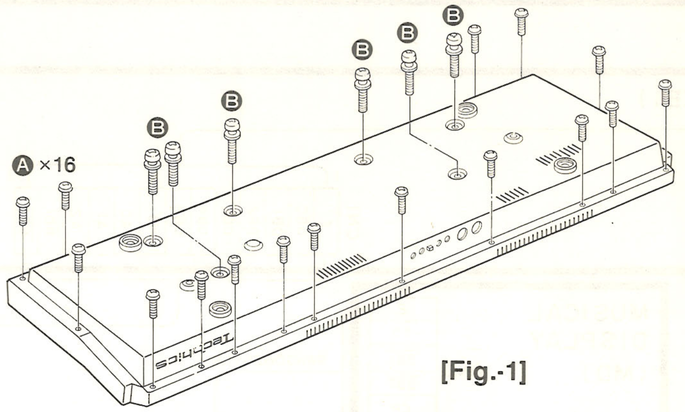
b) Lift the bottom board and open it to the back of the cabinet.

2. How to remove the keyboard

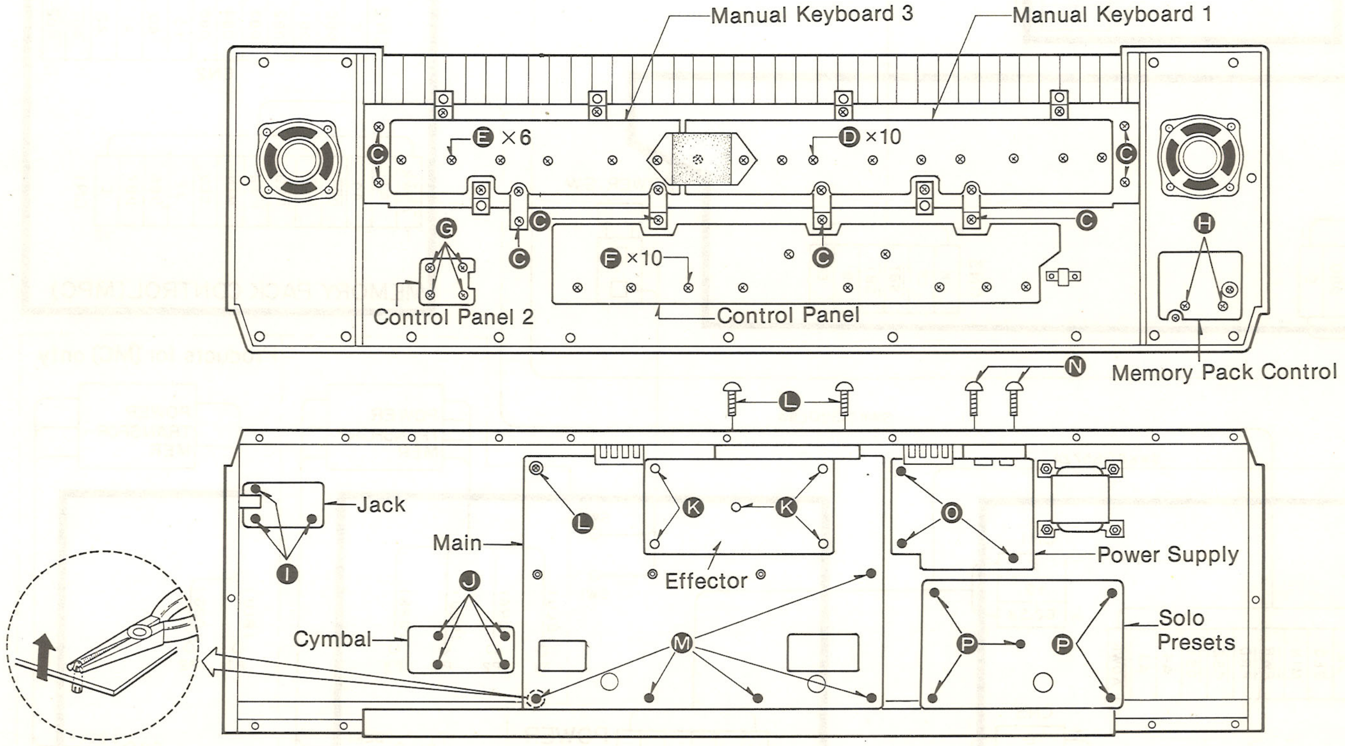
a) Open the cabinet according to step 1.

b) Remove the 8 setscrews Ⓒ which fasten the keyboard chassis.

c) Then the keyboard can be removed.



[Fig.-1]


Manual Keyboard 3
Manual Keyboard 1
Ⓔ×6
Ⓓ×10
Ⓒ
Ⓒ
Ⓒ
Ⓒ
Ⓒ
Ⓒ
Ⓖ
Ⓕ×10
Ⓗ
Control Panel 2
Control Panel
Ⓝ
Memory Pack Control
Ⓛ
Jack
Main
Ⓘ
Ⓙ
Ⓚ
Ⓚ
Effector
Ⓛ
Ⓞ
Power Supply
Cymbal
Ⓜ
Ⓟ
Ⓟ
Solo Presets

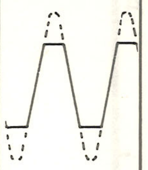
[Fig.-2]

3. How to remove the printed circuit boards

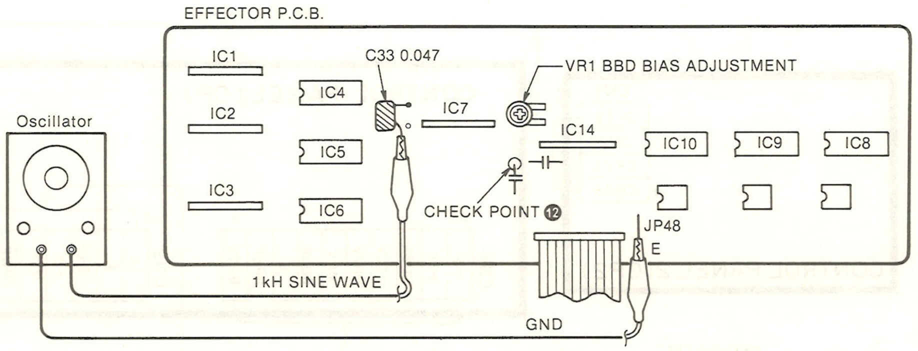
* Open the cabinet and pull out the connector of printed circuit boards.

- ■ Manual keyboard 1 (MKB1) P.C.B.
  - •Remove the 10 setscrews Ⓓ on the manual keyboard 1 P.C.B.
- ■ Manual keyboard 3 (MKB3) P.C.B.
  - •Remove the 6 setscrews Ⓔ on the manual keyboard 3 P.C.B.
- ■ Control panel (CP) P.C.B.
  - •Remove the 10 setscrews Ⓕ on the control panel P.C.B.
- ■ Control panel 2 (CP2) P.C.B
  - •Remove the 4 setscrews Ⓖ on the control panel 2 P.C.B.
- ■ Memory pack control (MPC) P.C.B.
  - •Remove the 2 setscrews Ⓗ on the memory pack control P.C.B.
- ■ Jack P.C.B.
  - •Release the 3 claws Ⓘ of P.C.B. holder to remove the jack P.C.B.
- ■ Cymbal P.C.B.
  - •Release the 4 claws Ⓙ of P.C.B. holder to remove the cymbal P.C.B.
- ■ Effector (EFF) P.C.B.
  - •Release the 5 claws Ⓚ of P.C.B. holder to remove the effector P.C.B.
- ■ Main P.C.B.
  - •Remove the 3 setscrews Ⓛ which fasten the main P.C.B. .
  - •Release the 5 claws Ⓜ of P.C.B. holder to remove the main P.C.B.
- ■ Power supply (PS) P.C.B.
  - •Remove the 2 setscrews Ⓝ on the back of the lower cabinet.
  - •Release the 3 claws Ⓞ of P.C.B. holder to remove the power supply P.C.B.
- ■ Solo presets (SPS) P.C.B.
  - •Release the 5 claws Ⓟ of P.C.B. holder to remove the solo presets P.C.B.

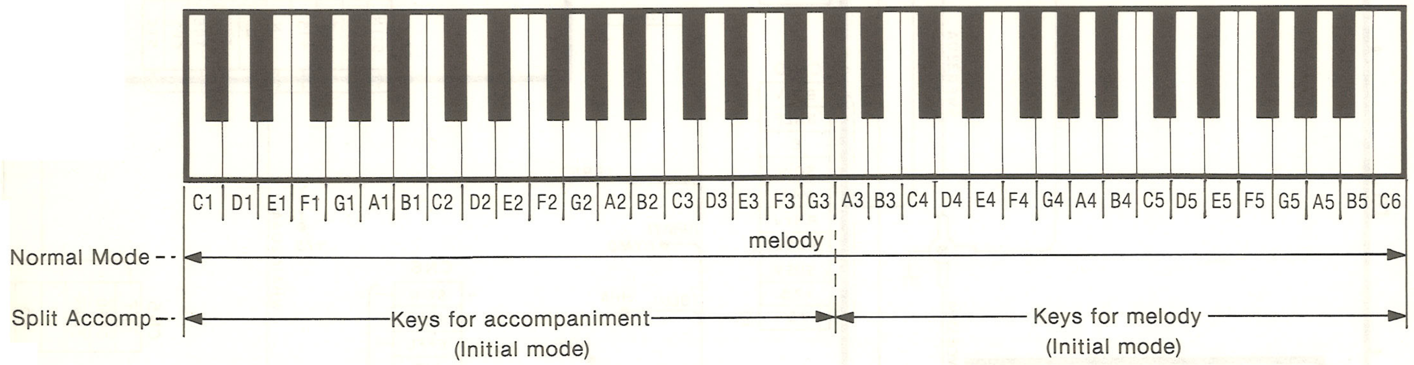
MEASUREMENTS AND ADJUSTMENTS

ADJUSTMENT	SETTING	METER USED	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Tuning	Poly presets ....Full organ Keyboard..................A3 Key	Frequency counter	Main P.C.B.	L1	Check point ㉓	440±1 Hz
BBD bias	——	Oscilloscope, Oscillator	Effector P.C.B.	VR1	Check point ⑫	

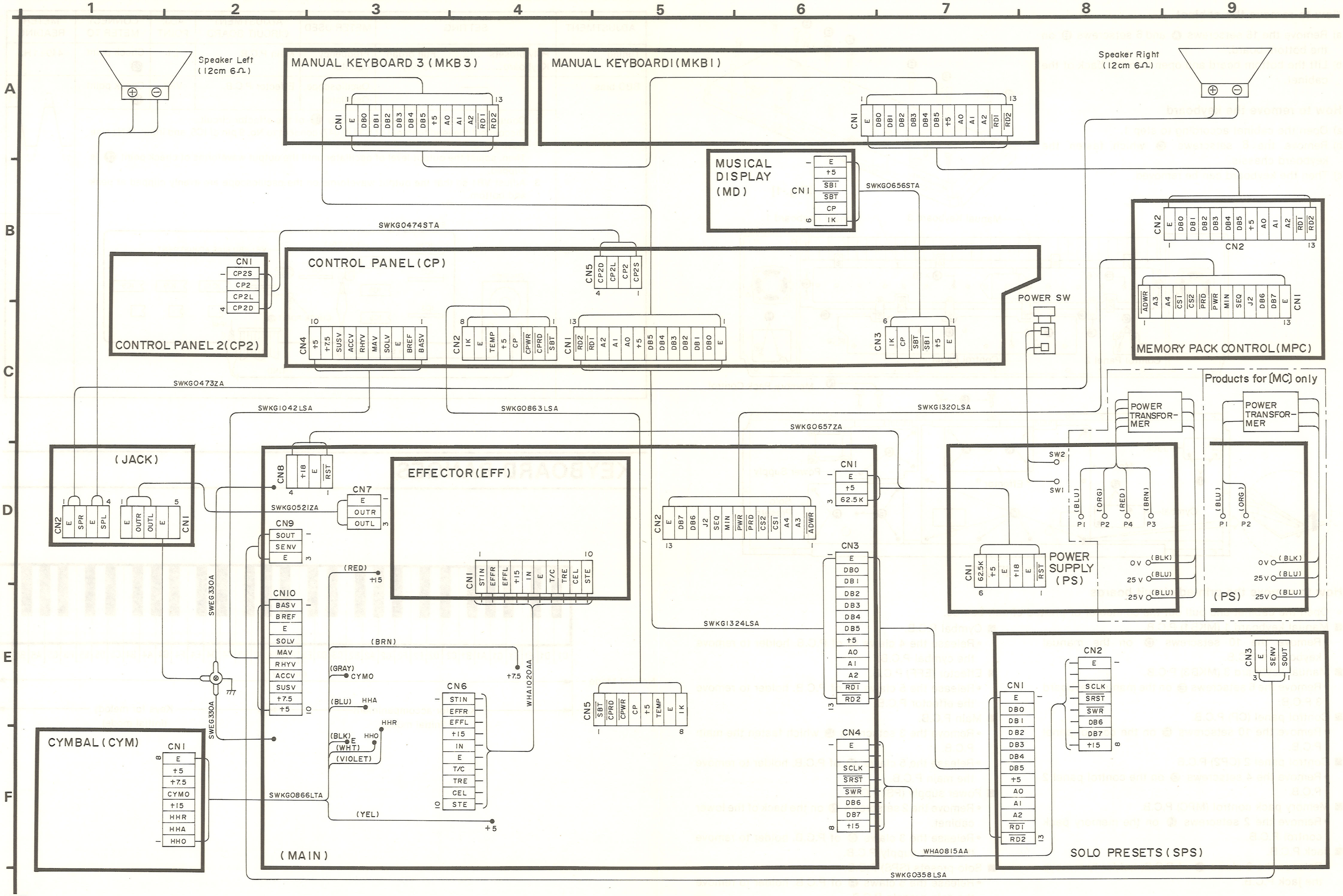
1. Connect the oscilloscope to check point ⑫ of the effector circuit.
2. Disconnect the lead terminal of C33 (0.047) connect to No. 9 pin of IC5, and input 1 kHz sine wave there.
   Then, adjust the output level of oscillator until the output waveforms of check point ⑫ is clipped.
3. Adjust VR1 so that the output waveforms on the oscilloscope are evenly clipped at peak and bottom.


EFFECTOR P.C.B.
IC1
IC2
IC3
IC4
IC5
IC6
C33 0.047
IC7
VR1 BBD BIAS ADJUSTMENT
IC14
IC10
IC9
IC8
CHECK POINT ⑫
JP48
E
Oscillator
1kH SINE WAVE
GND

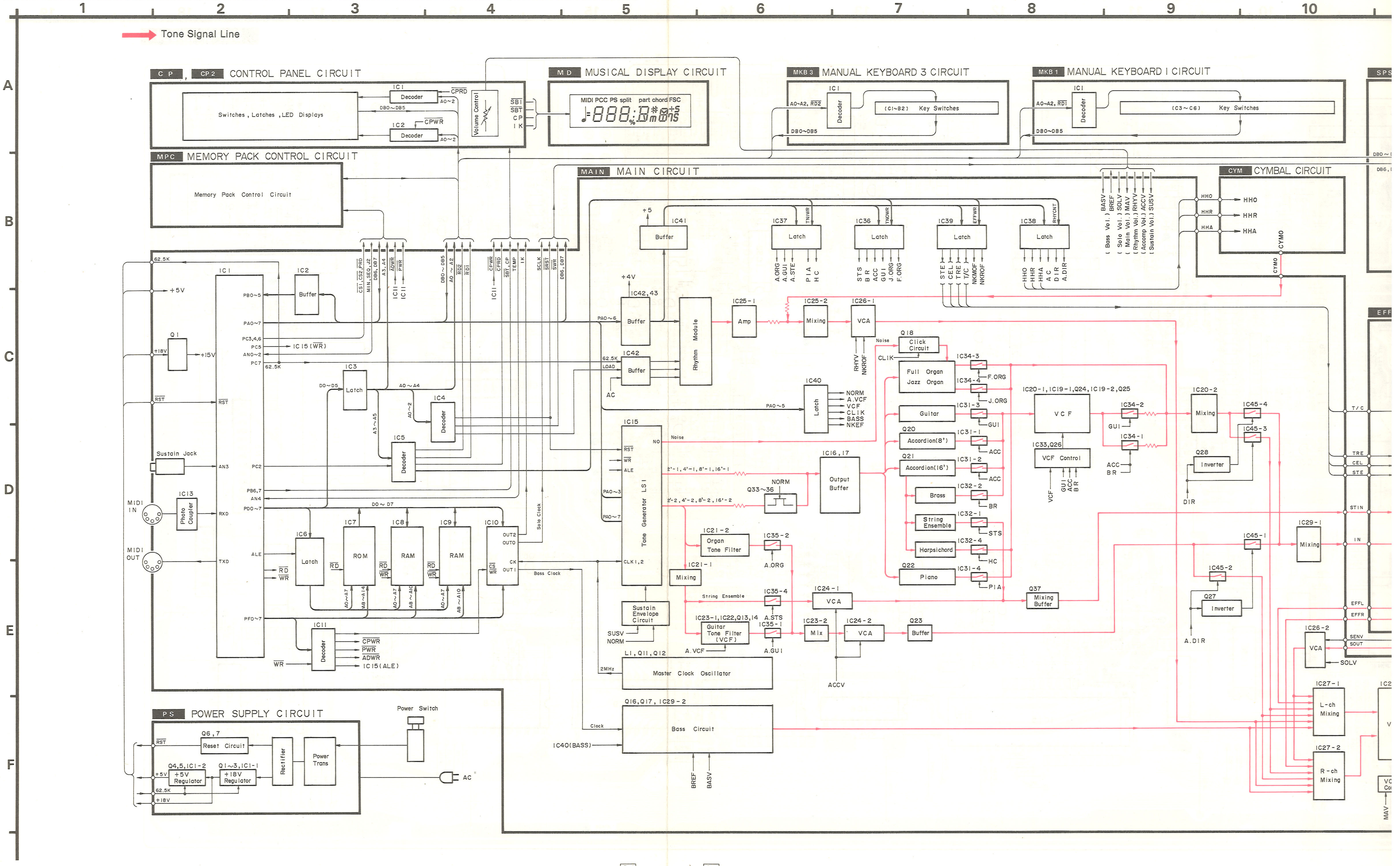
KEYBOARD RANGES

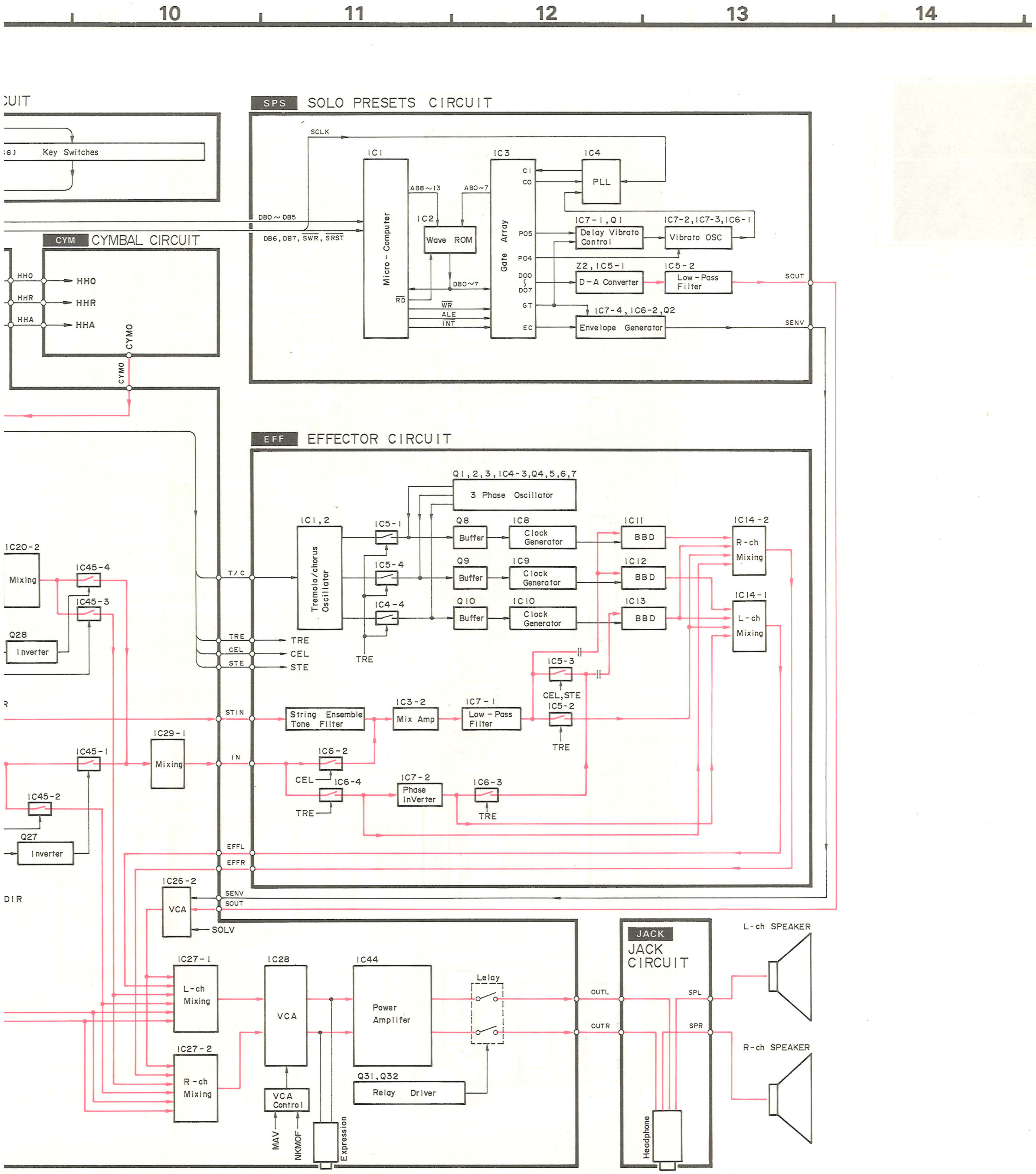

C1
D1
E1
F1
G1
A1
B1
C2
D2
E2
F2
G2
A2
B2
C3
D3
E3
F3
G3
A3
B3
C4
D4
E4
F4
G4
A4
B4
C5
D5
E5
F5
G5
A5
B5
C6
melody
Normal Mode
Split Accomp
Keys for accompaniment
(Initial mode)
Keys for melody
(Initial mode)

WIRING CONNECTION DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Speaker Left (12cm 6Ω)
Speaker Right (12cm 6Ω)
MANUAL KEYBOARD 3 (MKB3)
CN1 E DB0 DB1 DB2 DB3 DB4 DB5 +5 A0 A1 A2 RD1 RD2
MANUAL KEYBOARD1 (MKB1)
CN1 E DB0 DB1 DB2 DB3 DB4 DB5 +5 A0 A1 A2 RD1 RD2
MUSICAL DISPLAY (MD)
CN1 E +5 SB1 SBT CP IK
SWKG0656STA
SWKG0474STA
CONTROL PANEL 2 (CP2)
CN1 CP2S CP2 CP2L CP2D
CONTROL PANEL (CP)
CN5 CP2D CP2L CP2 CP2S
CN4 +5 +7.5 SUSV ACCV RHYV MAV SOLV E BREF BASV
CN2 IK E TEMP +5 CP CPWR CPRD SBT
CN1 RD2 RD1 A2 A1 A0 +5 DB5 DB4 DB3 DB2 DB1 DB0 E
CN3 IK CP SBT SB1 +5 E
POWER SW
MEMORY PACK CONTROL (MPC)
CN2 E DB0 DB1 DB2 DB3 DB4 DB5 +5 A0 A1 A2 RD1 RD2
CN1 ADWR A3 A4 CS1 CS2 PRD PWR MIN SEQ J2 DB6 DB7 E
SWKG0473ZA
SWKG1042LSA
SWKG0863LSA
SWKG1320LSA
SWKG0657ZA
Products for (MC) only
POWER TRANSFORMER
POWER TRANSFORMER
(JACK)
CN2 E SPR E SPL
CN1 E OUTR OUTL E
CN8 +18 E RST
CN7 E OUTR OUTL
SWKG0521ZA
CN9 SOUT SENV E
EFFECTOR (EFF)
CN1 STIN EFFR EFFL +15 IN E T/C TRE CEL STE
CN1 E +5 62.5K
CN2 E DB7 DB6 J2 SEQ MIN PWR PRD CS2 CS1 A4 A3 ADWR
CN3 E DB0 DB1 DB2 DB3 DB4 DB5 +5 A0 A1 A2 RD1 RD2
SW2
SW1
(BLU) (ORG) (RED) (BRN)
P1 P2 P4 P3
(BLU) (ORG)
P1 P2
POWER SUPPLY (PS)
CN1 62.5K +5 E +18 E RST
0V (BLK)
25V (BLU)
25V (BLU)
(PS)
SWEG330A
CN10 BASV BREF E SOLV MAV RHYV ACCV SUSV +7.5 +5
(RED) +15
(BRN) +7.5
(GRAY) CYMO
(BLU) HHA
HHR
(BLK) E HHO
(WHT)
(VIOLET)
(YEL) +5
WHA1020AA
CN6 STIN EFFR EFFL +15 IN E T/C TRE CEL STE
CN5 SBT CPRD CPWR CP +5 TEMP E IK
SWKG1324LSA
CN4 E SCLK SRST SWR DB6 DB7 +15
CYMBAL (CYM)
CN1 E +5 +7.5 CYMO +15 HHR HHA HHO
SWKG0866LTA
(MAIN)
SOLO PRESETS (SPS)
CN2 E SCLK SRST SWR DB6 DB7 +15
CN1 E DB0 DB1 DB2 DB3 DB4 DB5 +5 A0 A1 A2 RD1 RD2
CN3 E SENV SOUT
WHA0815AA
SWKG0358LSA

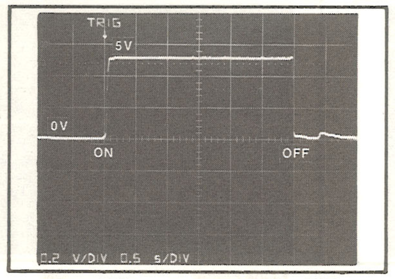
TOTAL BLOCK DIAGRAM


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
Tone Signal Line
CP, CP2 CONTROL PANEL CIRCUIT
Switches, Latches, LED Displays
IC1 Decoder
IC2 Decoder
CPRD
CPWR
DB0~DB5
A0~2
Volume Control
SBI
SBT
CP
IK
MD MUSICAL DISPLAY CIRCUIT
MIDI PCC PS split part chord FSC
MKB3 MANUAL KEYBOARD 3 CIRCUIT
IC1 Decoder
(C1~B2) Key Switches
A0~A2, RD2
DB0~DB5
MKB1 MANUAL KEYBOARD 1 CIRCUIT
(C3~C6) Key Switches
A0~A2, RD1
MPC MEMORY PACK CONTROL CIRCUIT
Memory Pack Control Circuit
MAIN MAIN CIRCUIT
CYM CYMBAL CIRCUIT
HHO
HHR
HHA
CYMO
IC41 Buffer
IC37 Latch
IC36 Latch
IC39 Latch
IC38 Latch
TNIWR
TNOWR
EFFWR
RHYCNT
A.ORG
A.GUI
A.STE
PIA
HC
STS
BR
ACC
GUI
J.ORG
F.ORG
STE
CEL
TRE
T/C
NKMOF
NKROF
HHO
HHR
HHA
AC
DIR
A.DIR
BASV (Bass Vol.)
BREF
SOLV (Solo Vol.)
MAV (Main Vol.)
RHYV (Rhythm Vol.)
ACCV (Accomp Vol.)
SUSV (Sustain Vol.)
IC1
IC2 Buffer
PB0~5
PA0~7
PC3,4,6
PC5
AN0~2
PC7
IC15 (WR)
62.5K
+5V
Q1
+18V
+15V
RST
Sustain Jack
AN3
PC2
PB6,7
AN4
PD0~7
IC13 Photo Coupler
MIDI IN
MIDI OUT
RXD
TXD
ALE
RD
WR
PF0~7
IC3 Latch
D0~D5
A0~A4
A3~A5
A0~2
IC4 Decoder
IC5 Decoder
D0~D7
IC6 Latch
IC7 ROM
IC8 RAM
IC9 RAM
IC10
OUT2
OUT0
CK
OUT1
CS
Bass Clock
Solo Clock
A0~A7
A8~A14
A8~A10
IC11 Decoder
CPWR
PWR
ADWR
IC15 (ALE)
CS1, CS2, PRD
MIN, SEQ, J2
DB6, DB7
A3, A4
ADWR
PWR
IC11
DB0~DB5
A0~A2
RD2
RD1
CPWR
CPRD
SBT, CP
TEMP
IK
SCLK
SRST
SWR
DB6, DB7
+4V
IC42, 43 Buffer
IC42 Buffer
PA0~6
62.5K
LOAD
AC
Rhythm Module
IC25-1 Amp
IC25-2 Mixing
IC26-1 VCA
Noise
Q18 Click Circuit
CLIK
RHYV
NKROF
IC40 Latch
PA0~5
NORM
A.VCF
VCF
CLIK
BASS
NKEF
IC15 Tone Generator LSI
RST
WR
ALE
NO
PA0~3
PA0~7
CLK1,2
2'-1, 4'-1, 8'-1, 16'-1
2'-2, 4'-2, 8'-2, 16'-2
NORM
Q33~36
IC16,17 Output Buffer
Full Organ
Jazz Organ
IC34-3
IC34-4
F.ORG
J.ORG
Guitar
IC31-3
GUI
Q20 Accordion(8')
IC31-1
ACC
Q21 Accordion(16')
IC31-2
Brass
IC32-2
BR
String Ensemble
IC32-1
STS
Harpsichord
IC32-4
HC
Q22 Piano
IC31-4
PIA
IC20-1, IC19-1, Q24, IC19-2, Q25
VCF
IC34-2
IC34-1
IC33, Q26 VCF Control
VCF
GUI
ACC
BR
IC20-2 Mixing
IC45-4
IC45-3
Q28 Inverter
DIR
IC21-2 Organ Tone Filter
IC35-2
A.ORG
IC21-1 Mixing
String Ensemble
IC35-4
IC24-1 VCA
IC23-1, IC22, Q13, 14 Guitar Tone Filter (VCF)
A.STS
IC35-1
A.VCF
A.GUI
IC23-2 Mix
IC24-2 VCA
Q23 Buffer
ACCV
Q37 Mixing Buffer
IC29-1 Mixing
IC45-1
IC45-2
Q27 Inverter
A.DIR
Sustain Envelope Circuit
SUSV
NORM
L1, Q11, Q12 Master Clock Oscillator
2MHz
Clock
Q16, Q17, IC29-2 Bass Circuit
IC40 (BASS)
BREF
BASV
T/C
TRE
CEL
STE
STIN
IN
EFFL
EFFR
SENV
SOUT
SOLV
IC26-2 VCA
IC27-1 L-ch Mixing
IC27-2 R-ch Mixing
MAV
PS POWER SUPPLY CIRCUIT
Q6, 7 Reset Circuit
RST
Q4, 5, IC1-2 +5V Regulator
Q1~3, IC1-1 +18V Regulator
Rectifier
Power Trans
Power Switch
AC
+5V
62.5K
+18V
SPS
DB0~
DB6,
EFF
IC2


10
11
12
13
14
SPS SOLO PRESETS CIRCUIT
Key Switches
SCLK
IC1
IC3
IC4
PLL
CI
CO
AB8～13
AB0～7
DB0～DB5
DB6, DB7, SWR, SRST
IC2
Wave ROM
Micro - Computer
Gate Array
RD
DB0～7
WR
ALE
INT
PO5
PO4
DO0～DO7
GT
EC
IC7-1, Q1
Delay Vibrato Control
IC7-2, IC7-3, IC6-1
Vibrato OSC
Z2, IC5-1
D-A Converter
IC5-2
Low-Pass Filter
IC7-4, IC6-2, Q2
Envelope Generator
SOUT
SENV
CYM CYMBAL CIRCUIT
HHO
HHR
HHA
CYMO
EFF EFFECTOR CIRCUIT
Q1, 2, 3, IC4-3, Q4, 5, 6, 7
3 Phase Oscillator
IC1, 2
Tremolo/chorus Oscillator
IC5-1
IC5-4
IC4-4
Q8
Q9
Q10
Buffer
IC8
IC9
IC10
Clock Generator
IC11
IC12
IC13
BBD
IC14-2
R-ch Mixing
IC14-1
L-ch Mixing
IC5-3
CEL, STE
IC5-2
TRE
CEL
STE
T/C
STIN
String Ensemble Tone Filter
IC3-2
Mix Amp
IC7-1
Low-Pass Filter
IC6-2
IC6-4
IC7-2
Phase Inverter
IC6-3
IN
EFFL
EFFR
IC20-2
Mixing
IC45-4
IC45-3
Q28
Inverter
IC29-1
IC45-1
IC45-2
Q27
DIR
IC26-2
VCA
SENV
SOUT
SOLV
IC27-1
L-ch Mixing
IC27-2
R-ch Mixing
IC28
VCA
VCA Control
MAV
NKMOF
Expression
IC44
Power Amplifer
Q31, Q32
Relay Driver
Lelay
OUTL
OUTR
JACK
JACK CIRCUIT
SPL
SPR
Headphone
L-ch SPEAKER
R-ch SPEAKER

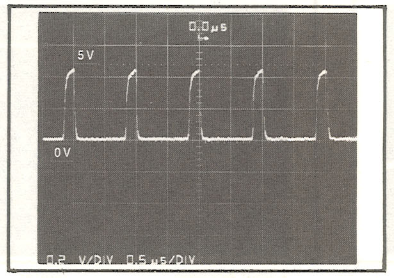
WAVEFORMS OF MAIN CIRCUIT

① $\overline{\text{RST}}$

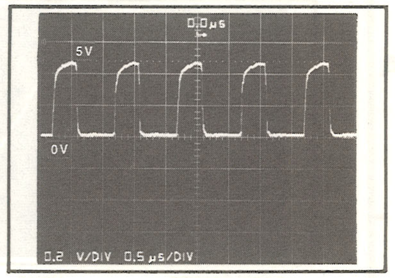


- Power SW ....ON—OFF

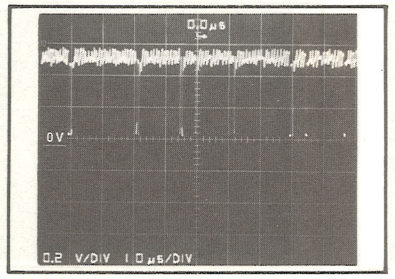
② ALE



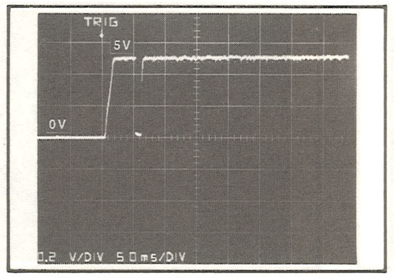
③ $\overline{\text{RD}}$



④ $\overline{\text{WR}}$

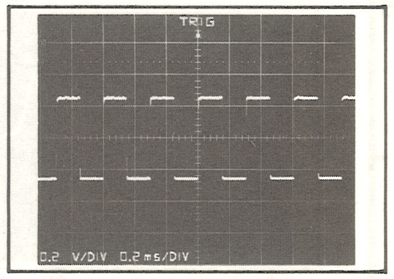


⑤ Reset



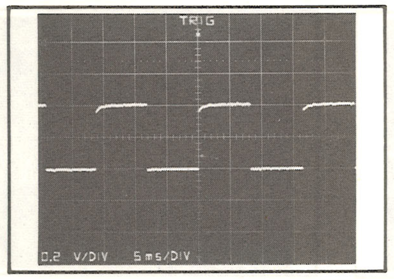
- Power SW ....ON

⑥ Solo Clock



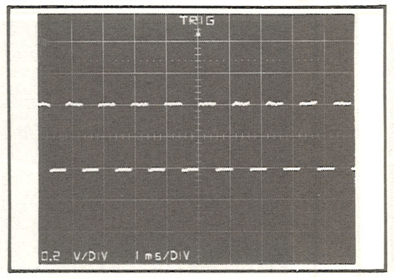
- Solo Presets ....ON
- Keyboard ....A3 Key

⑦ Bass Clock

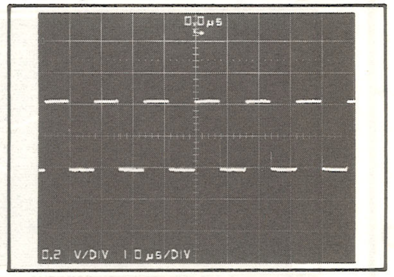


- One Finger.......................ON
- Accomp Key ....C Key

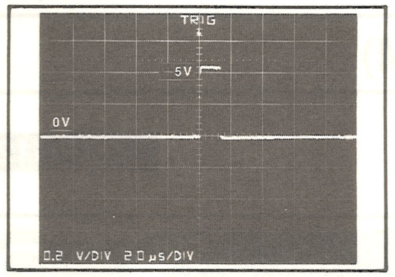
⑧ Display Clock (1 K)



⑨ Rhythm Clock (62.5 K)

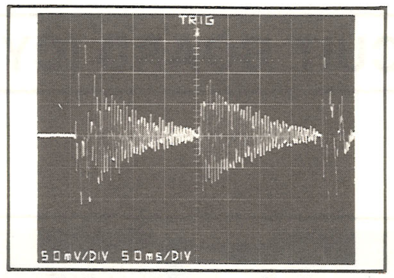


⑩ LOAD



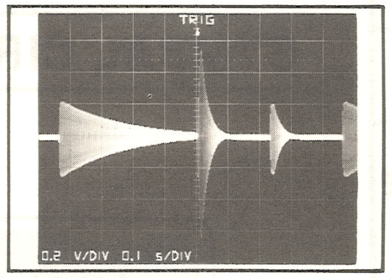
- Rhythm ....Start

⑪ Drum Percussion



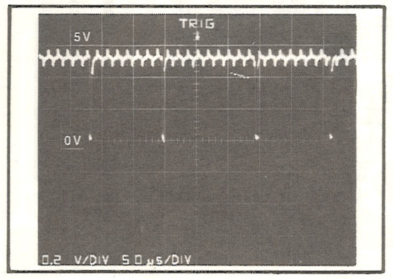
- Rhythm ....Cha-Cha
- Tempo ....Fast

⑫ Hi-Hat

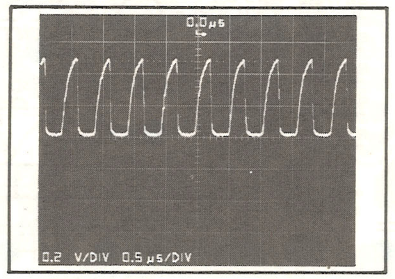


- Rhythm ....Cha-Cha

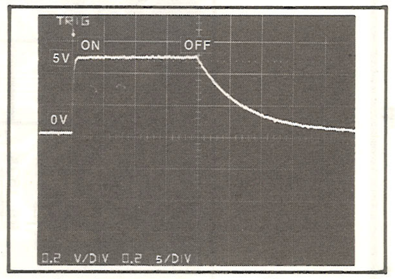
⑬ $\overline{\text{WR}}$



⑭ Master Clock (2 MHz)



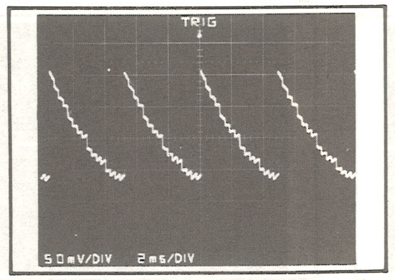
⑮ Sustain Control



- Sustain ....ON
- Sustain Control...............Short
- Poly Presets ....Full Organ
- Keyboard ....ON—OFF

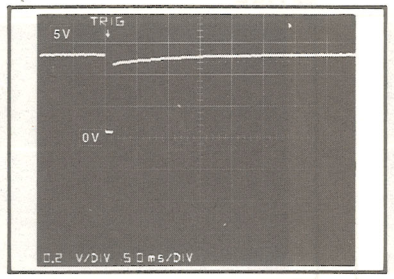
MAIN CIRCUIT BOARD (MAIN)

⑯



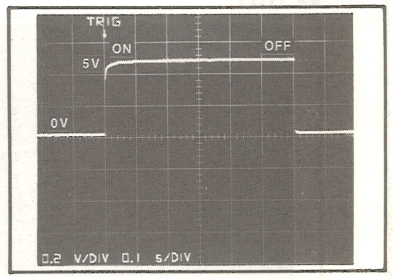
- Split Accomp..................Organ
- Accomp Key ....A Key

⑰



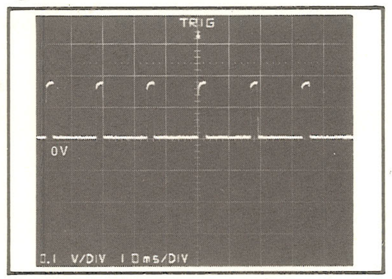
- Split Accomp..................Guitar
- Accomp Key ....ON

⑱



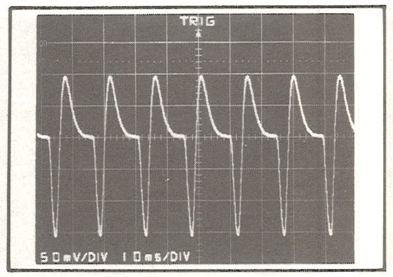
- One Finger.....................ON
- Accomp Key ....ON—OFF

⑲



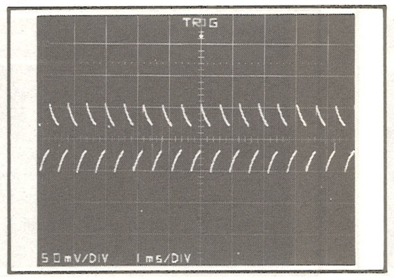
- One Finger.....................ON
- Accomp Key ....C Key
- Bass Volume..................Max.

⑳



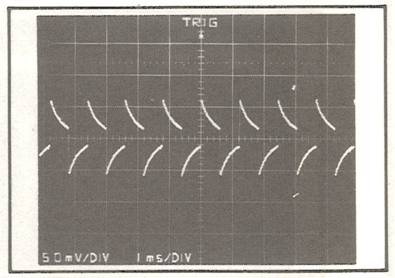
- One Finger.....................ON
- Accomp Key ....C Key
- Bass Volume..................Max.

㉑ 2′



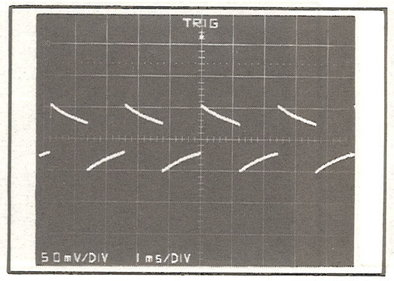
- Poly Presets ....Full Organ
- Keyboard ....A3 Key

㉒ 4′



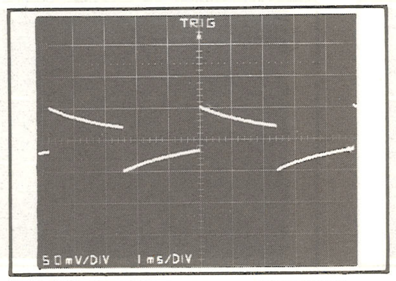
- Poly Presets ....Full Organ
- Keyboard ....A3 Key

㉓ 8′



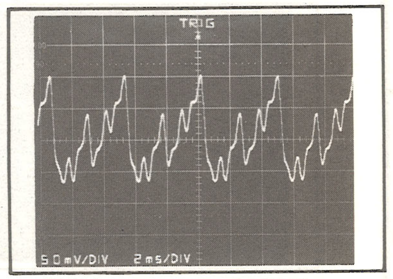
- Poly Presets ....Full Organ
- Keyboard ....A3 Key

㉔ 16′



- Poly Presets ....Full Organ
- Keyboard ....A3 Key

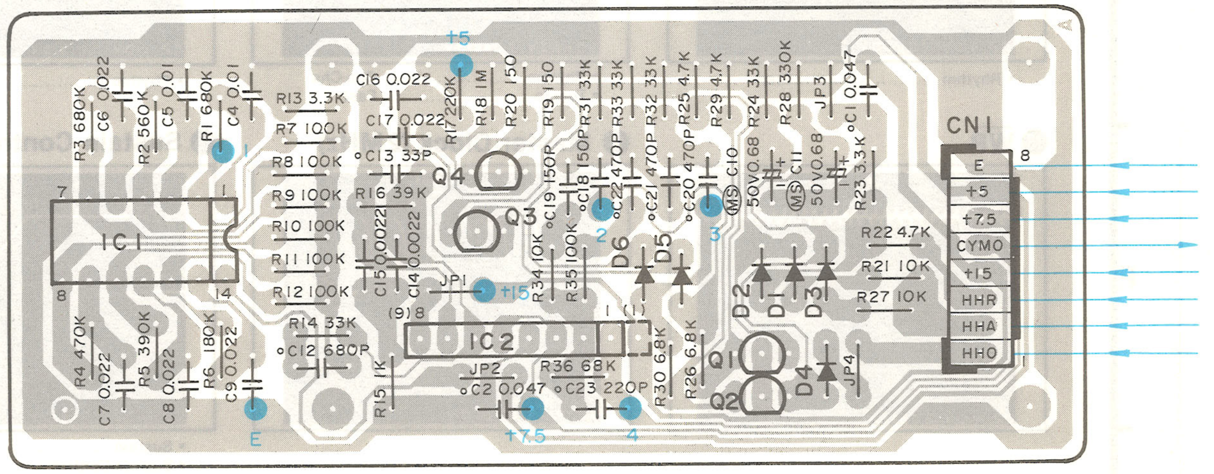
㉕

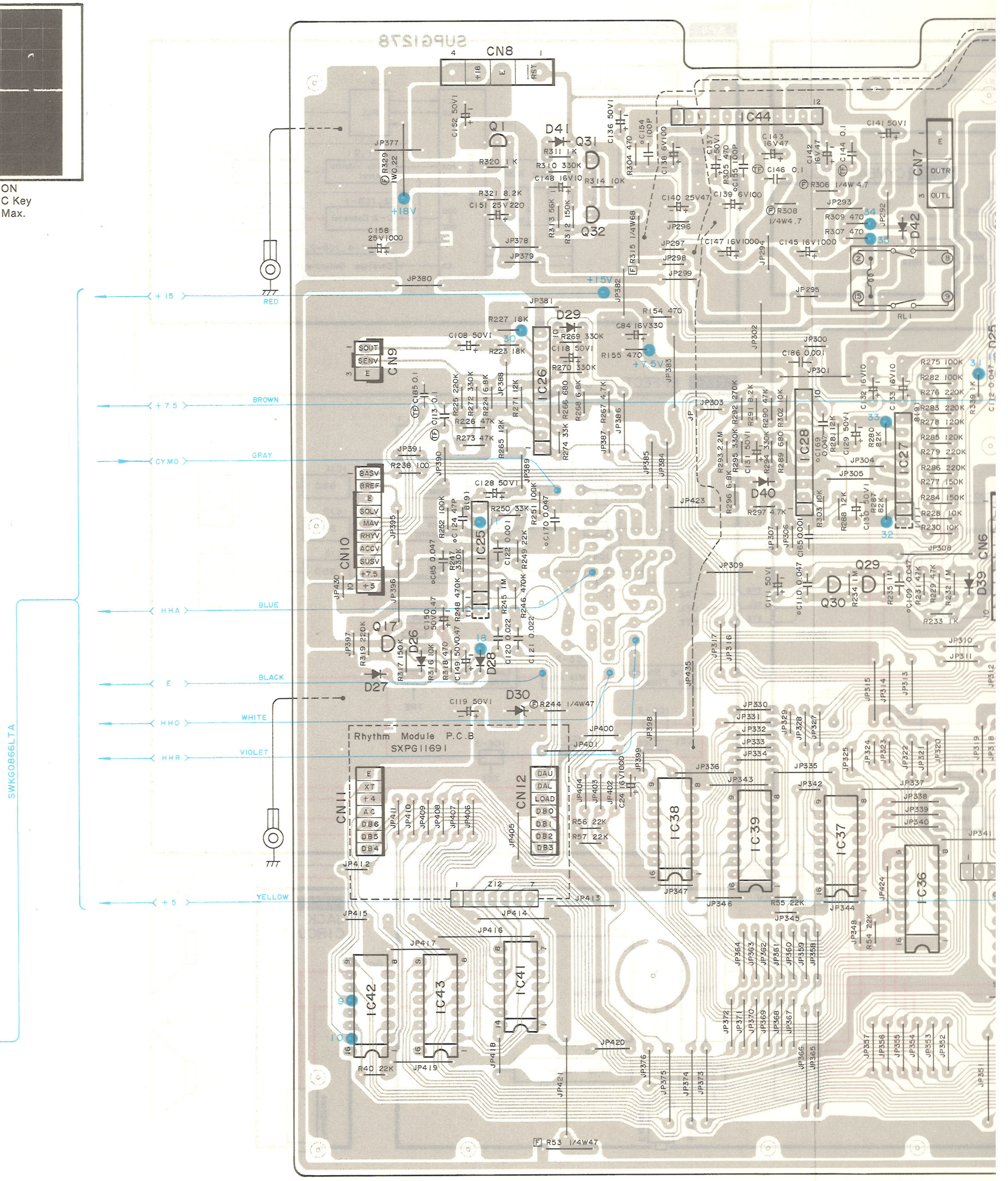


- Split Accomp..................Organ
- Accomp Key ....A Key
- Accomp Volume ....Max.

CYMBAL CIRCUIT BOARD (CYM)

SXPG129411


IC1
IC2
Q1
Q2
Q3
Q4
D1
D2
D3
D4
D5
D6
CN1
E
+5
+7.5
CYMO
+15
HHR
HHA
HHO
R1 680K
R2 560K
R3 680K
R4 470K
R5 390K
R6 180K
R7 100K
R8 100K
R9 100K
R10 100K
R11 100K
R12 100K
R13 3.3K
R14 33K
R15 1K
R16 39K
R17 220K
R18 1M
R19 150
R20 150
R21 10K
R22 4.7K
R23 3.3K
R24 33K
R25 4.7K
R26 6.8K
R27 10K
R28 330K
R29 4.7K
R30 6.8K
R31 33K
R32 33K
R33 33K
R34 10K
R35 100K
R36 68K
C1 0.047
C2 0.047
C4 0.01
C5 0.01
C6 0.022
C7 0.022
C8 0.022
C9 0.022
C10 50V0.68
C11 50V0.68
C12 680P
C13 33P
C14 0.0022
C15 0.0022
C16 0.022
C17 0.022
C18 150P
C19 150P
C20 470P
C21 470P
C22 470P
C23 220P
JP1
JP2
JP3
JP4
+5
+15
+7.5
E
1
2
3
4

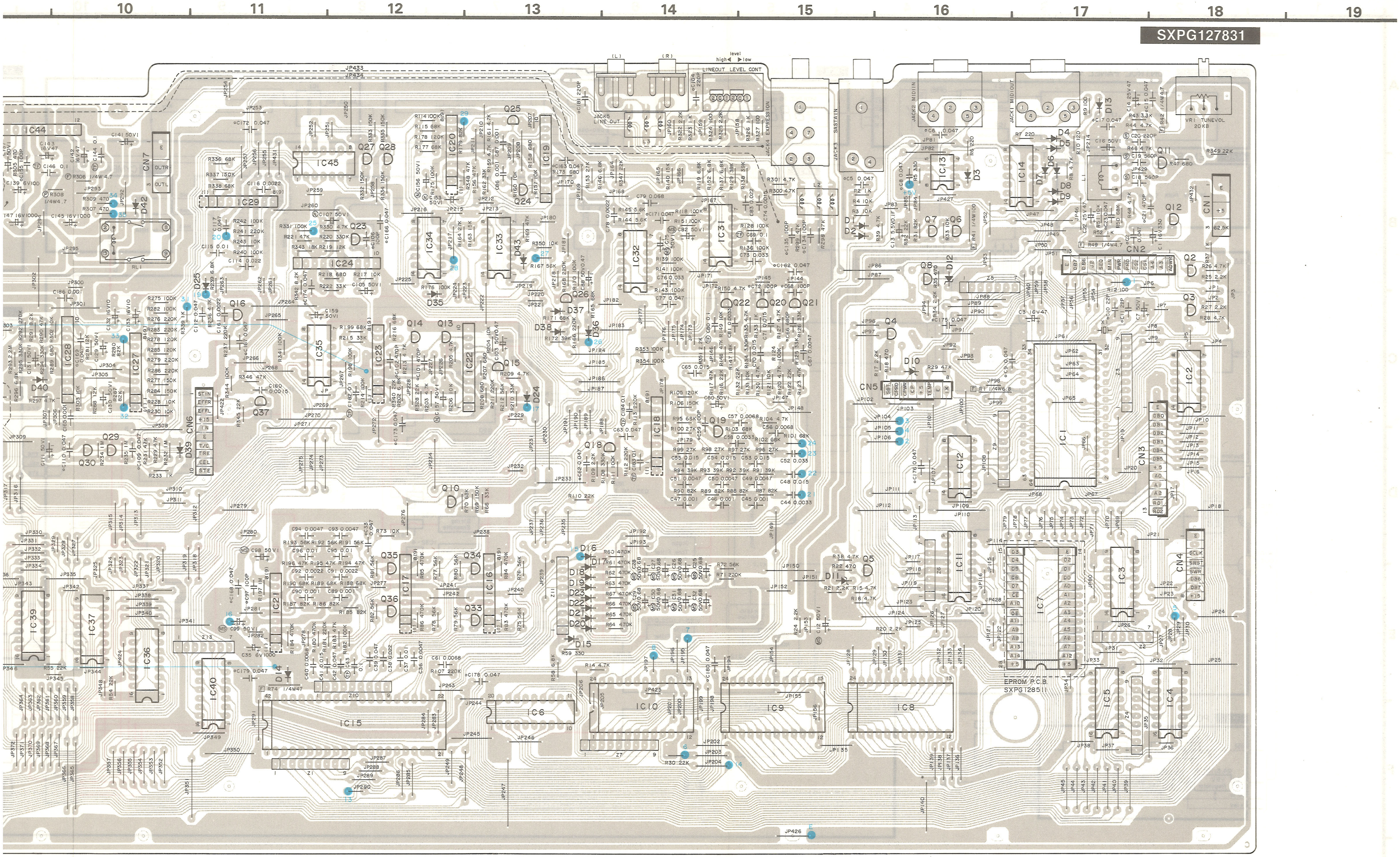

SWK6066LTA
+15
+7.5
CYMO
HHA
E
HHO
HHR
+5
RED
BROWN
GRAY
BLUE
BLACK
WHITE
VIOLET
YELLOW
SUPG1278
CN8
RST
E
IC44
CN7
OUTR
OUTL
RL1
D41
D42
Q31
Q32
+18V
+15V
+7.5V
CN9
SOUT
SENV
E
D29
IC26
IC28
IC27
D40
Q29
Q30
D39
CN6
CN10
BASV
BREF
E
SOLV
MAV
RHYV
ACCV
SUSV
+7.5
+5
IC25
Q17
D26
D27
D28
D30
Rhythm Module P.C.B
SXPG11691
CN11
E
XT
+4
AC
DB6
DB5
DB4
CN12
LOAD
DB0
DB1
DB2
DB3
IC38
IC39
IC37
IC36
IC42
IC43
IC41
Z12

■ Measuri
1. The wa
shown

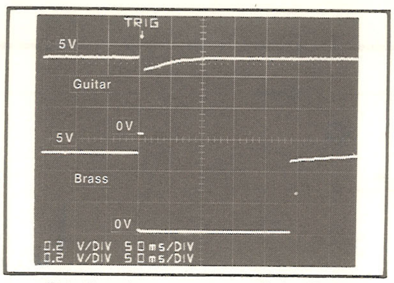
■ Measuring of output waveforms

1. The waveform was measured by "National Digital Strage Oscilloscope VP-5730A". Therefore the waveforms of musical tone signals shown may somewhat change due to variation of timing of measure.

2. The voltage shown in the photo is 1/10 of the actual value. However, the actual voltage is 10 times of as shown in this photo.

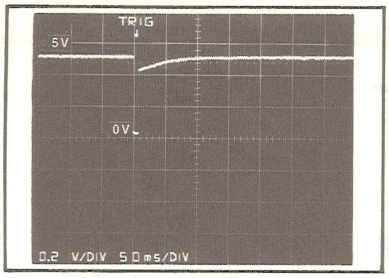

10
11
12
13
14
15
16
17
18
19
SXPG127831
JACK5 LINE OUT
LINEOUT LEVEL CONT
JACK4 EXPRESSION
JACK3 SASTAIN
JACK2 MIDI IN
JACK1 MIDI OUT
VR1 TUNEVOL 20KB
CN1
CN2
CN3
CN4
CN5
CN6
CN7
RL1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC24
IC27
IC28
IC29
IC31
IC32
IC33
IC34
IC35
IC36
IC37
IC39
IC40
IC44
IC45
EPROM P.C.B. SXPG128511

㉖



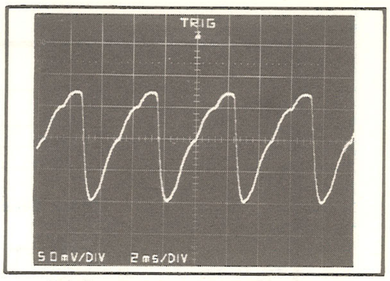
- Poly Presets ....Guitar/Brass
- Keyboard ....ON

㉗



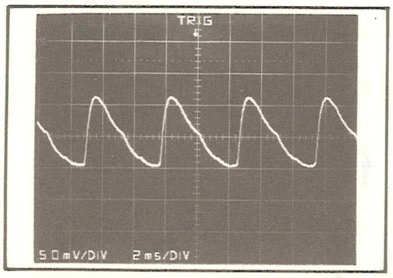
- Poly Presets ....Guitar
- Keyboard ....ON

㉘



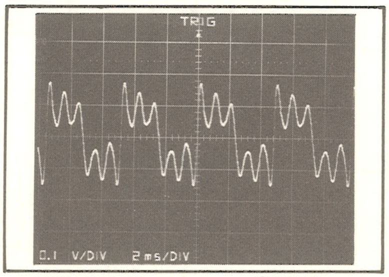
- Poly Presets ....Brass
- Keyboard ....A3 Key

㉙



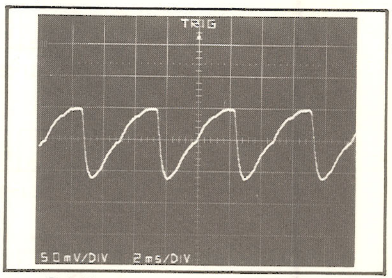
- Poly Presets ....Brass
- Keyboard ....A3 Key

㉚



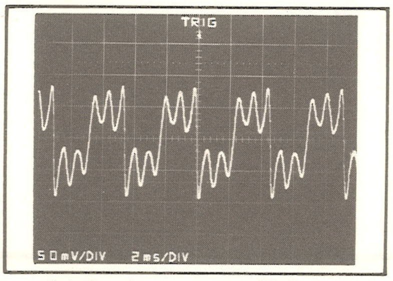
- Solo Presets ....Clarinet
- Keyboard ....A3 Key
- Solo Volume ....Max.

㉛



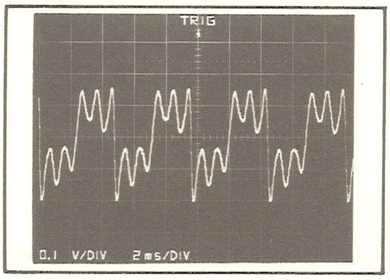
- Poly Presets ....Brass
- Effect ....Tremolo
- Keyboard ....A3 Key

㉜, ㉝



- Solo Presets ....Clarinet
- Keyboard ....A3 Key
- Solo Volume ....Max.

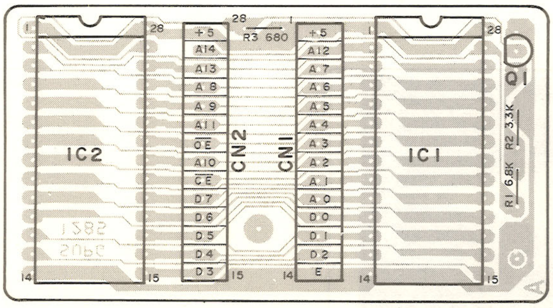
㉞, ㉟



- Solo Presets ....Clarinet
- Keyboard ....A3 Key
- Main Volume ....Max.
- Solo Volume ....Max.

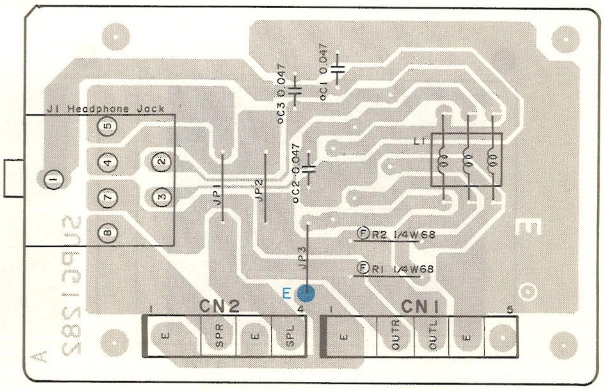
■ EP ROM P.C.B.

SXPG128511

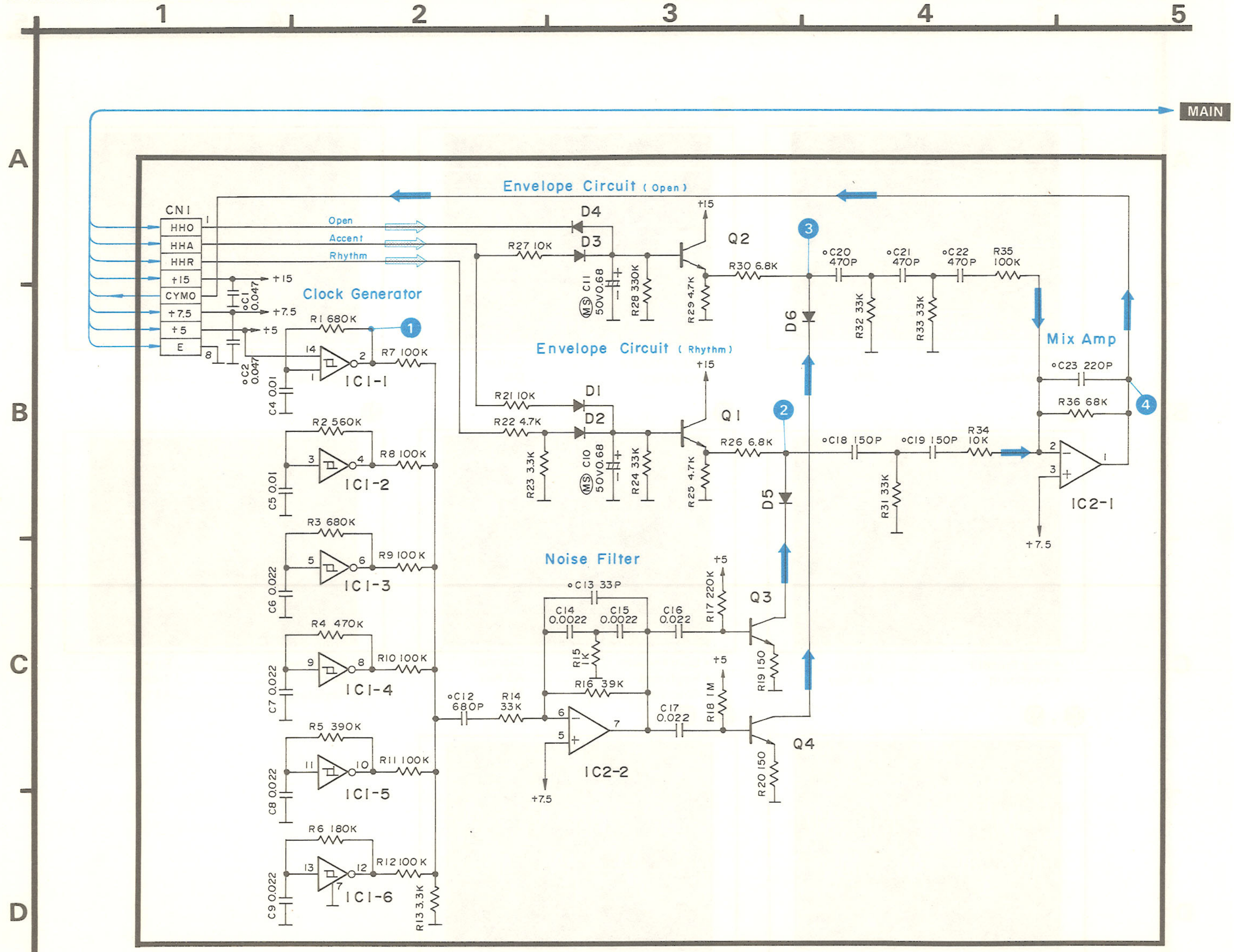

1
28
+5
A14
A13
A8
A9
A11
OE
A10
CE
D7
D6
D5
D4
D3
R3 680
A12
A7
A6
A5
A4
A3
A2
A1
A0
D0
D1
D2
E
CN2
CN1
IC2
IC1
Q1
R2 3.3K
R1 6.8K
14
15
A

■ JACK P.C.B.

SXPG128211

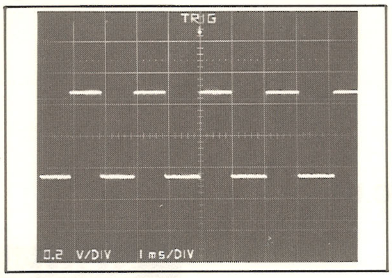

J1 Headphone Jack
1
2
3
4
5
7
8
C3 0.047
C1 0.047
C2 0.047
JP1
JP2
JP3
L1
R2 1/4W68
R1 1/4W68
CN2
CN1
E
SPR
E
SPL
E
OUTR
OUTL
E
SLPG1282
A

CYMBAL CIRCUIT DIAGRAM (CYM)

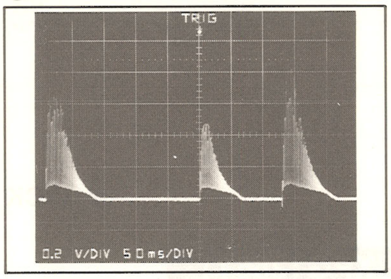


1
2
3
4
5
A
B
C
D
MAIN
CN1
HHO
HHA
HHR
+15
CYMO
+7.5
+5
E
Open
Accent
Rhythm
Envelope Circuit (Open)
Envelope Circuit (Rhythm)
Clock Generator
Noise Filter
Mix Amp
D1
D2
D3
D4
D5
D6
Q1
Q2
Q3
Q4
IC1-1
IC1-2
IC1-3
IC1-4
IC1-5
IC1-6
IC2-1
IC2-2
R1 680K
R2 560K
R3 680K
R4 470K
R5 390K
R6 180K
R7 100K
R8 100K
R9 100K
R10 100K
R11 100K
R12 100K
R13 3.3K
R14 33K
R15 1K
R16 39K
R17 220K
R18 1M
R19 150
R20 150
R21 10K
R22 4.7K
R23 3.3K
R24 33K
R25 4.7K
R26 6.8K
R27 10K
R28 330K
R29 4.7K
R30 6.8K
R31 33K
R32 33K
R33 33K
R34 10K
R35 100K
R36 68K
C1 0.047
C2 0.047
C4 0.01
C5 0.01
C6 0.022
C7 0.022
C8 0.022
C9 0.022
C10 50V0.68
C11 50V0.68
C12 680P
C13 33P
C14 0.0022
C15 0.0022
C16 0.022
C17 0.022
C18 150P
C19 150P
C20 470P
C21 470P
C22 470P
C23 220P
①
②
③
④

①

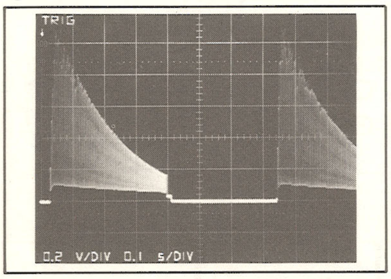


②



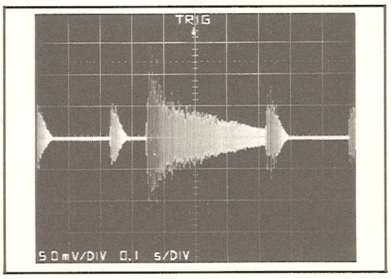
- Tempo .... ♩ = 160
- Rhythm ....Swing

③



- Tempo .... ♩ = 160
- Rhythm ....Swing

④

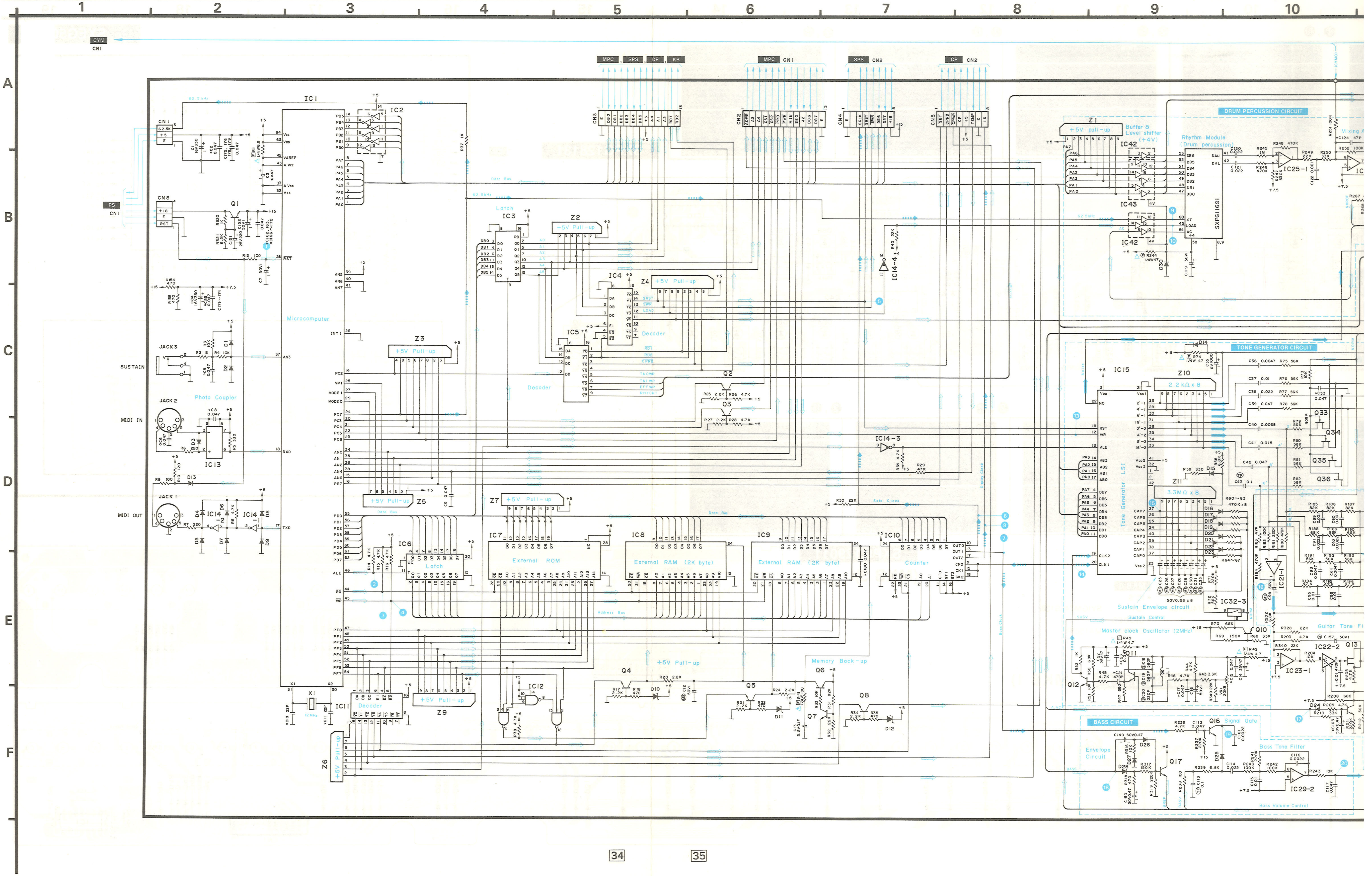


- Tempo .... ♩ = 160
- Rhythm ....Swing

NOTES:

• IC'S	
IC1:	SVIGHD14584B
IC2:	AN6551F
• TRANSISTORS	
Q1~4:	2SC2320LFG
• DIODES	
D1~6	MA165TA5VT

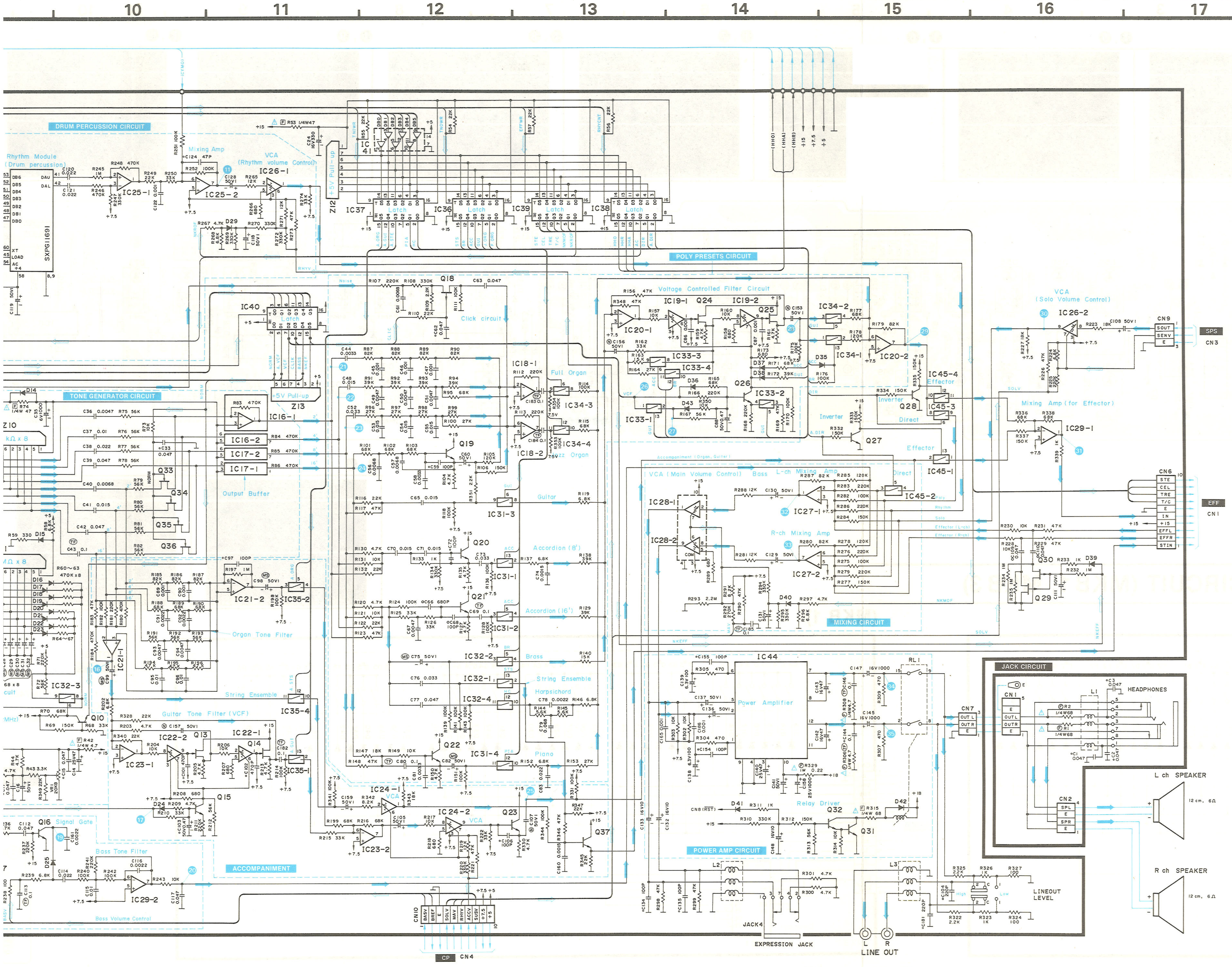
MAIN CIRCUIT DIAGRAM (MAIN)



1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
CYM
CN1
PS
CN8
IC1
IC2
Microcomputer
Q1
JACK 3
SUSTAIN
JACK 2
MIDI IN
Photo Coupler
IC13
JACK 1
MIDI OUT
IC14-2
IC14-1
MPC
SPS
CP
KB
CN3
CN2
CN4
CN5
Latch
IC3
Z2
+5V Pull-up
IC4
Z4
Decoder
IC5
Z3
Q2
Q3
Z5
Z7
IC6
IC7
IC8
IC9
IC10
External ROM
External RAM (2K byte)
Counter
Data Bus
Address Bus
IC11
IC12
Z9
Z6
Q4
Q5
Q6
Q7
Q8
Memory Back-up
IC14-3
IC14-4
DRUM PERCUSSION CIRCUIT
Z1
Buffer & Level shifter (+4V)
IC42
IC43
Rhythm Module (Drum percussion)
SXPG11691
IC25-1
Mixing
TONE GENERATOR CIRCUIT
IC15
Z10
2.2kΩ x 8
Z11
3.3MΩ x 8
Tone Generator LSI
Q33
Q34
Q35
Q36
IC32-3
IC21-1
Sustain Envelope circuit
Master clock Oscillator (2MHz)
Q10
Q11
Q12
IC22-2
IC23-1
Q13
Guitar Tone Filter
BASS CIRCUIT
Envelope Circuit
Q16
Signal Gate
Q17
Bass Tone Filter
IC29-2
Bass Volume Control

Notes ■ Important safety notice:

Components identified by ⚠ mark have special characteristics for safety.
When replacing any of these components, use only manufacturer's specified parts.


10
11
12
13
14
15
16
17
DRUM PERCUSSION CIRCUIT
Rhythm Module (Drum percussion)
SXPG11691
Mixing Amp
VCA (Rhythm volume Control)
+5V Pull-up
Latch
POLY PRESETS CIRCUIT
Click circuit
Voltage Controlled Filter Circuit
VCA (Solo Volume Control)
Mixing Amp (for Effector)
Inverter
Direct
Effector
TONE GENERATOR CIRCUIT
Output Buffer
Full Organ
Organ
Guitar
Accordion (8')
Accordion (16')
Brass
String Ensemble
Harpsichord
Piano
Organ Tone Filter
String Ensemble
Guitar Tone Filter (VCF)
Signal Gate
Bass Tone Filter
Bass Volume Control
ACCOMPANIMENT
VCA (Main Volume Control)
Bass
L-ch Mixing Amp
R-ch Mixing Amp
MIXING CIRCUIT
Power Amplifier
Relay Driver
POWER AMP CIRCUIT
JACK CIRCUIT
HEADPHONES
L ch SPEAKER
R ch SPEAKER
12 cm, 6Ω
LINEOUT LEVEL
EXPRESSION JACK
JACK4
LINE OUT
L
R
SPS
CN3
EFF
CN1
CP
CN4

18
19

■ Signal line:

Tone signal line.
Clock and sound source signal
Control signal line.

NOTES:

MAIN

• IC'S	
IC1:	SVIG7811G077
IC2:	MN4069UB
IC3, 40:	SVIGM74LS174
IC4, 11:	SVIGM74LS138
IC5:	SVIGM74LS145
IC6:	SVIGTC40H373
IC7:	(SXPG128511)
IC8, 9:	SVIGM512820R
IC10:	SVIGUPD8253
IC12:	DN74LS10
IC13:	SVIGTLP552
IC14:	SVIGM74LS05
IC15:	SVIGMSM5232R
IC16~18, 20, 21, 23, 25, 27, 29:	SVIGM5218L
IC19, 22, 24, 26, 28:	SVIGM5241L
IC31~35, 45:	SVIGUPD4066B
IC36~39:	SVIGHD14174B
IC41:	SVIGM53207
IC42, 43:	SVIGHD14050B
IC44:	AN7147
• TRANSISTORS	
Q1:	2SC1384RS
Q2, 3, 7, 10, 15~17, 19~23, 26~28, 31, 32, 37:	2SC2320LFG
Q4, 5, 8, 11, 12:	2SC1047C
Q6:	2SA933STRS
Q13, 14, 24, 25, 33~36:	2SK381D
Q18, 29, 30:	2SJ40CD
• DIODES	
D1~9, 13~29, 35~43:	MA165TA5VT
D10~12:	MA4036H
D30:	MA4039H
• COMPONENT COMBINATIONS	
Z1, 3, 4:	EXBP88223MM
Z2, 12, 13:	EXBP86223MM
Z5, 6:	EXBP86472MM
Z7, 9:	EXBP88472MM
Z10:	EXBP88222JM
Z11:	EXBP88335MM
• QUARTZ OSCILLATOR	
X1:	SVQG43U1200A
• RELAY	
RL1:	SSYGMR5212S
• COIL	
L1:	EIK1EG010B
L2, 3:	SLQG16W33A

EROM

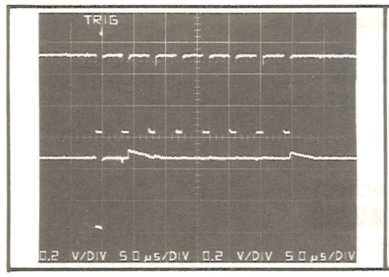
• IC'S	
IC1:	SVIG27128PGH
IC2:	SVIG27128PGL
• TRANSISTOR	
Q1:	2SC1047C

JACK

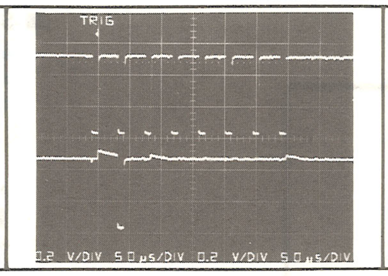
• COIL	
L1:	SLQG16W33A

CONTROL PANEL CIRCUIT BOARD (CP) (CP2)

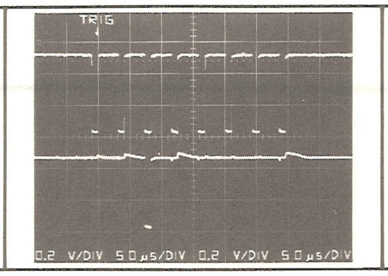
❶,❸



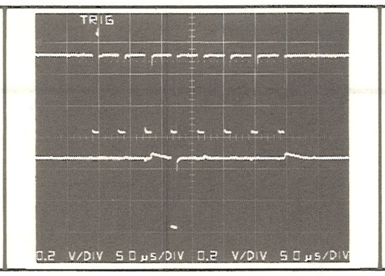
❶,❹



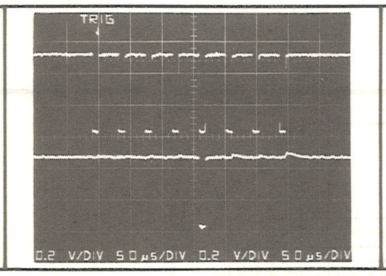
❶,❺



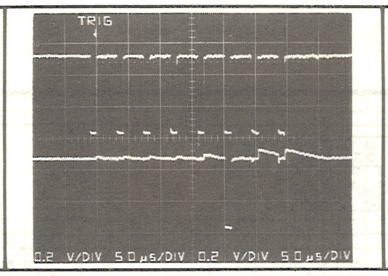
❶,❻



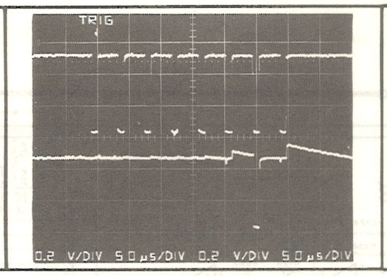
❶,❼



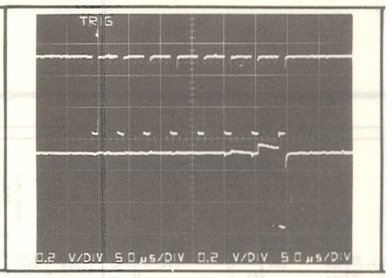
❶,❽



❶,❾



❶,❿



A

B

C

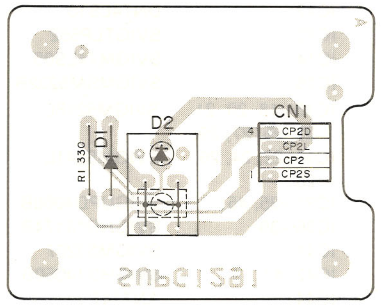
D

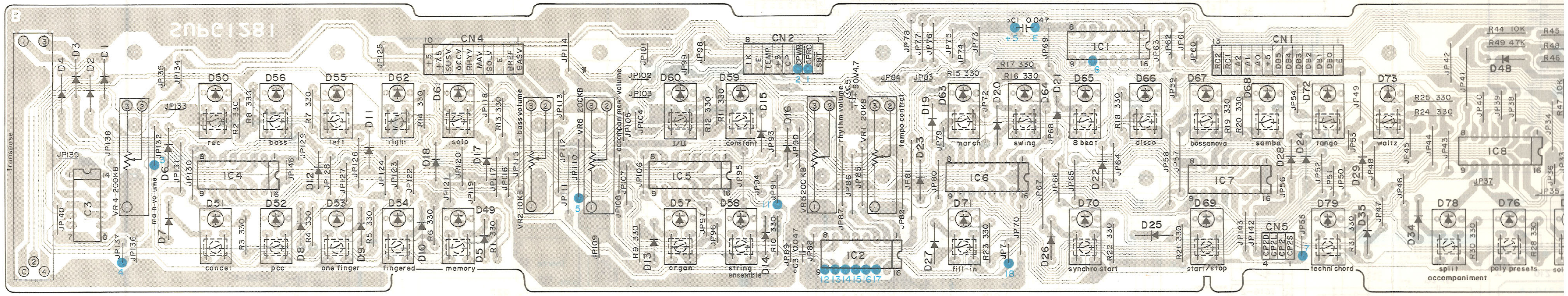
E

F

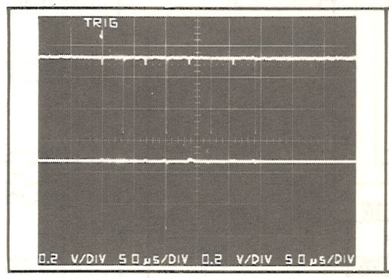
(CP 2)

SXPG129111

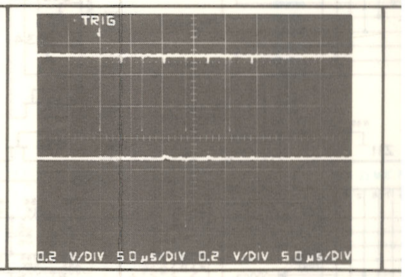

D2
D1
R1 330
CN1
CP2D
CP2L
CP2
CP2S
2UPG1281


B
2UPG1281
D4
D3
D2
D1
transpose
JP135
JP134
JP133
JP138
JP139
VR4 200KB
main volume
IC3
JP140
JP137
JP136
D6
D7
D50
D56
D55
D62
D61
R8 330
R2 330
R7 330
D11
R14 330
rec
bass
left
right
solo
IC4
D51
D52
D53
D54
R3 330
R4 330
R5 330
R6 330
D8
D9
D10
cancel
pcc
one finger
fingered
memory
CN4
+5
+7.5
SUSV
ACCV
RHYV
MAV
SOLV
E
BREF
BASV
R13 330
D18
D17
D49
D5
R1 330
VR2 10KB
bass volume
JP114
VR6 200KB
accompaniment volume
JP101
JP102
JP103
JP105
JP104
JP106
JP107
JP108
JP109
D60
D59
CN2
IK
E
TEMP
+5
CP
PRO
SBT
R12 330
R11 330
D15
D16
I/II
constant
IC5
D57
D58
R9 330
R10 330
D13
D14
organ
string ensemble
rhythm volume
C5 4.7
50V
VR1 20KB
VR8 200KB
C3 0.047
IC2
tempo control
JP78
JP77
JP76
JP75
JP74
JP73
R15 330
D19
D63
D20
D23
march
IC6
D71
R23 330
D27
fill-in
C1 0.047
IC1
R17 330
R16 330
D21
D64
D65
D66
D67
swing
8 beat
R18 330
disco
D22
D70
D26
synchro start
D25
R21 330
R22 330
CN1
RD2
RD1
A2
A1
A0
+5
DB5
DB4
DB3
DB2
DB1
DB0
E
D68
R19 330
R20 330
bossanova
samba
IC7
D69
start/stop
CN5
CP2D
CP2L
CP2
CP2S
D72
D24
D28
tango
D79
D29
R31 330
D35
techni chord
D73
waltz
R25 330
R24 330
D34
D78
R30 330
split accompaniment
R44 10K
R49 47K
D48
IC8
D76
R28 330
poly presets

❷,⓮

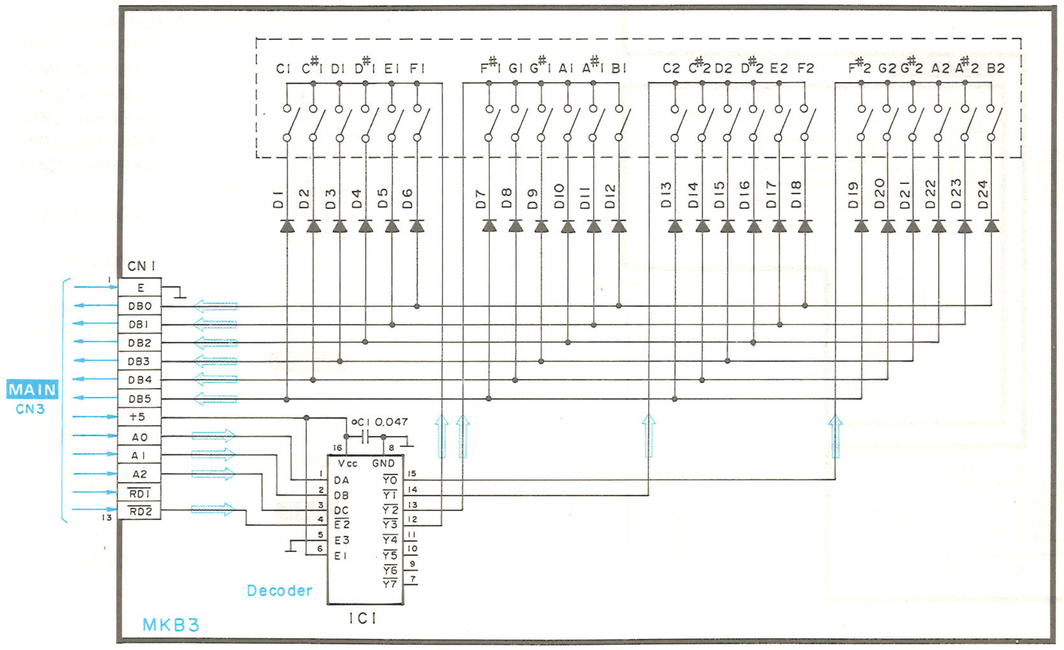


❷,⓯

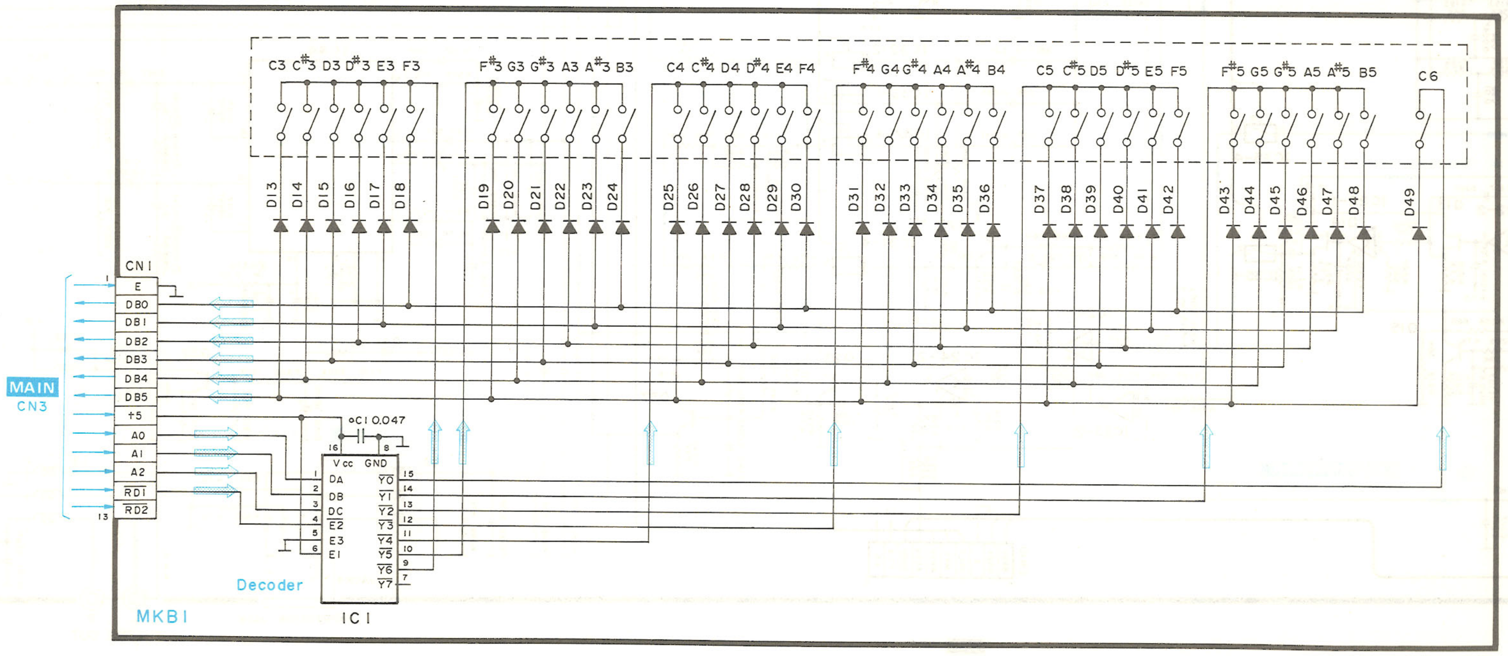


MANUAL KEYBOARD CIRCUIT (MKB1, MKB3)

(MKB 3)


C1 C#1 D1 D#1 E1 F1
F#1 G1 G#1 A1 A#1 B1
C2 C#2 D2 D#2 E2 F2
F#2 G2 G#2 A2 A#2 B2
D1 D2 D3 D4 D5 D6
D7 D8 D9 D10 D11 D12
D13 D14 D15 D16 D17 D18
D19 D20 D21 D22 D23 D24
CN1
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
A0
A1
A2
RD1
RD2
MAIN
CN3
C1 0.047
Vcc
GND
DA
DB
DC
E2
E3
E1
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Decoder
IC1
MKB3

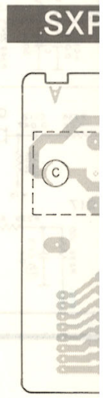
(MKB 1)


C3 C#3 D3 D#3 E3 F3
F#3 G3 G#3 A3 A#3 B3
C4 C#4 D4 D#4 E4 F4
F#4 G4 G#4 A4 A#4 B4
C5 C#5 D5 D#5 E5 F5
F#5 G5 G#5 A5 A#5 B5
C6
D13 D14 D15 D16 D17 D18
D19 D20 D21 D22 D23 D24
D25 D26 D27 D28 D29 D30
D31 D32 D33 D34 D35 D36
D37 D38 D39 D40 D41 D42
D43 D44 D45 D46 D47 D48
D49
CN1
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
A0
A1
A2
RD1
RD2
MAIN
CN3
C1 0.047
Vcc
GND
DA
DB
DC
E2
E3
E1
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
Decoder
IC1
MKB1

NOTES:

MKB 1

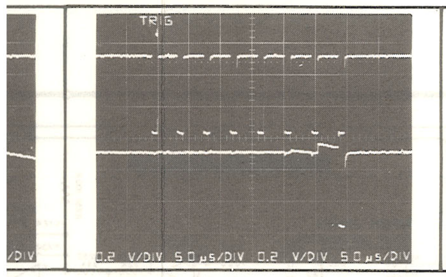
- IC'S
  IC1: SVIGM74LS138
- DIODES
  D13~49: MA150IR



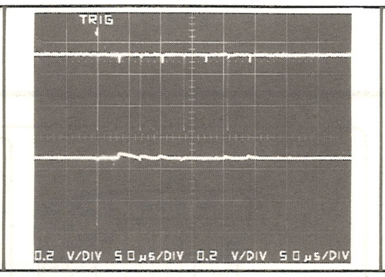
MUSICAL DISPLAY CIRCUIT (MD)

10 11 12 13 14 15 16 17 18 19

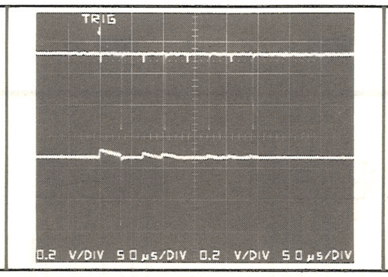
❶, ⑩



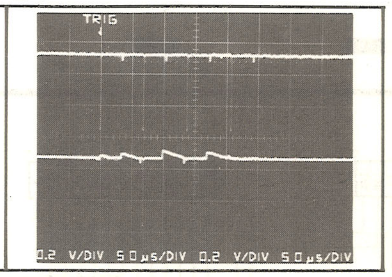
❷, ⑪



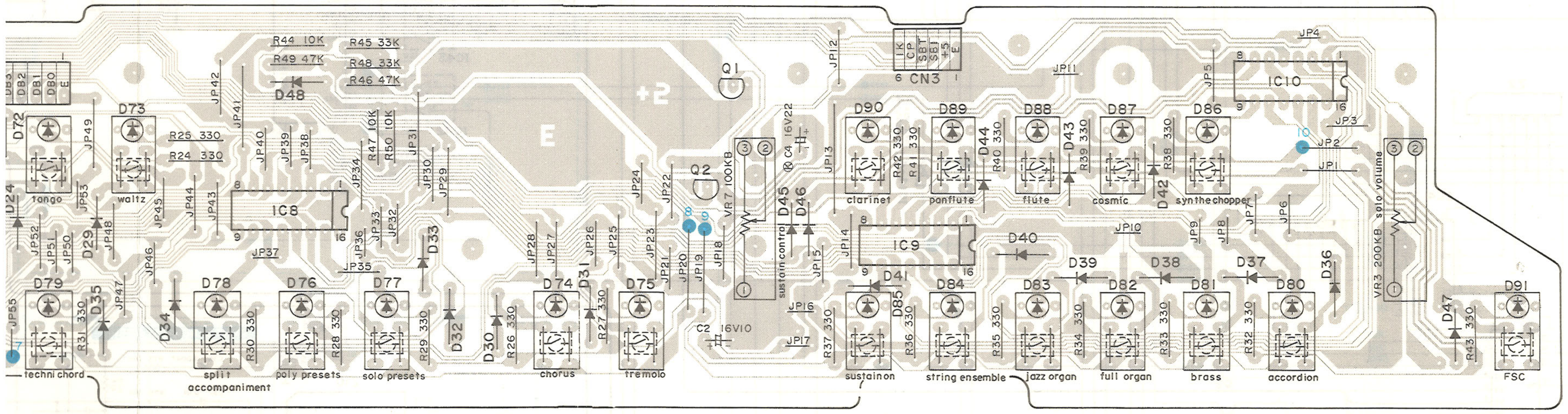
❷, ⑫



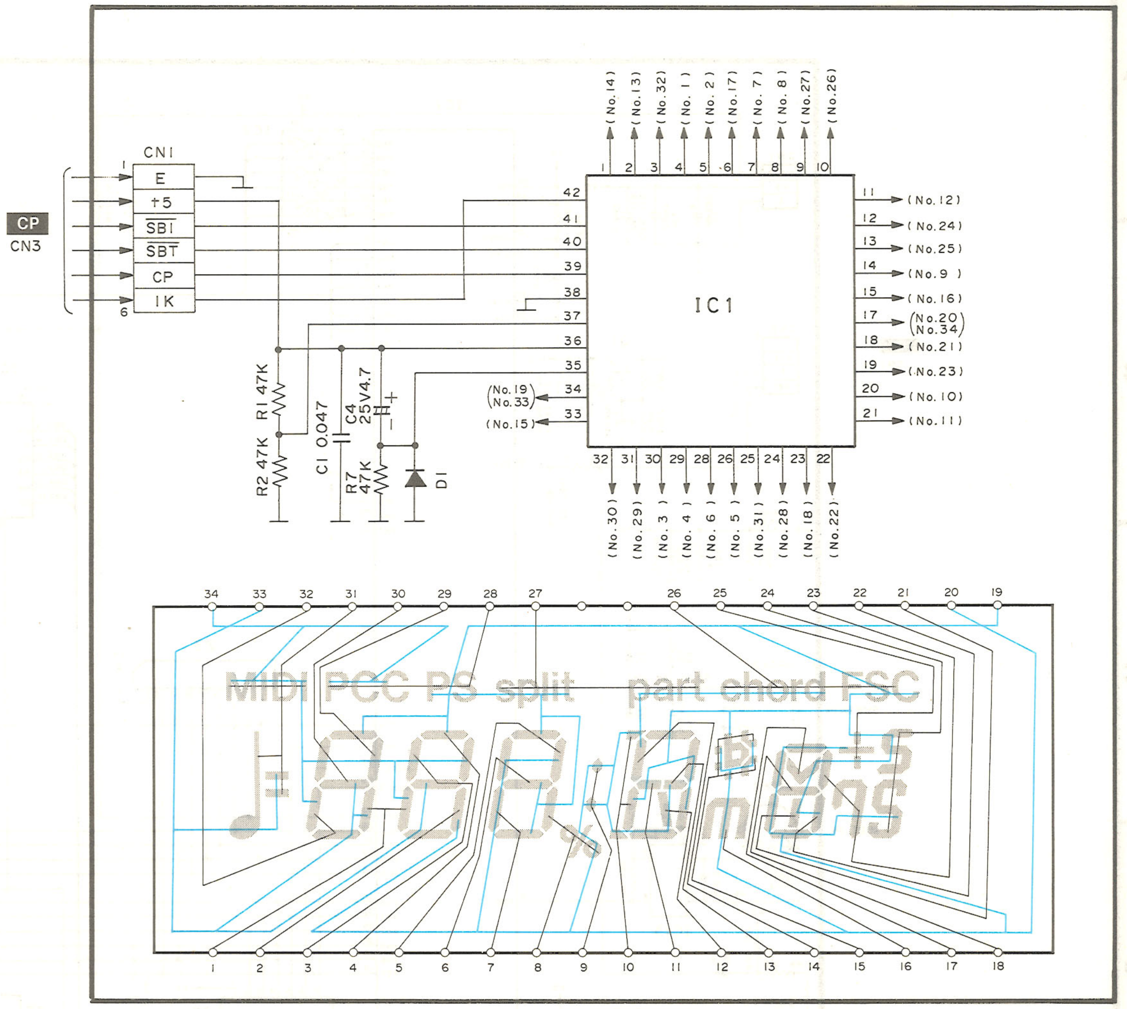
❷, ⑬



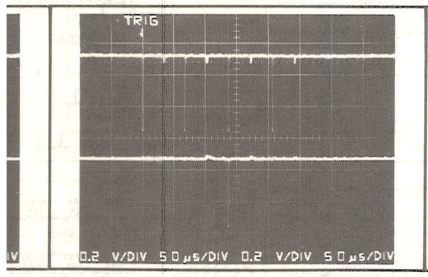
SXPG128131


CN3
IK CP SBT SBI +5 E
Q1
Q2
IC8
IC9
IC10
E
+2
R44 10K
R49 47K
R45 33K
R48 33K
R46 47K
D48
D72
D73
R25 330
R24 330
R47 10K
R50 10K
tango
waltz
D90
D89
D88
D87
D86
clarinet
panflute
flute
cosmic
synthechopper
VR7 100KB
sustain control
VR3 200KB solo volume
D40
D39
D38
D37
D36
D79
D78
D76
D77
D74
D75
D84
D83
D82
D81
D80
D91
techni chord
split accompaniment
poly presets
solo presets
chorus
tremolo
sustain on
string ensemble
jazz organ
full organ
brass
accordion
FSC
C2 16V10
C4 16V22

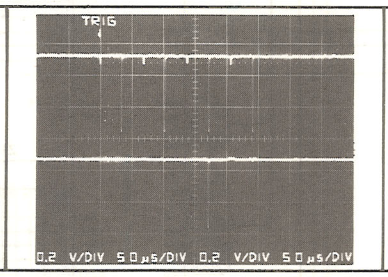
SXEG50A


CP
CN3
CN1
E
+5
SBI
SBT
CP
IK
1
6
IC1
R1 47K
R2 47K
C1 0.047
C4 25V4.7
R7 47K
D1
(No.14)
(No.13)
(No.32)
(No. 1)
(No. 2)
(No.17)
(No. 7)
(No. 8)
(No.27)
(No.26)
(No.12)
(No.24)
(No.25)
(No.9)
(No.16)
(No.20 No.34)
(No.21)
(No.23)
(No.10)
(No.11)
(No.19 No.33)
(No.15)
(No.30)
(No.29)
(No. 3)
(No. 4)
(No. 6)
(No. 5)
(No.31)
(No.28)
(No.18)
(No.22)
MIDI PCC PS split part chord FSC

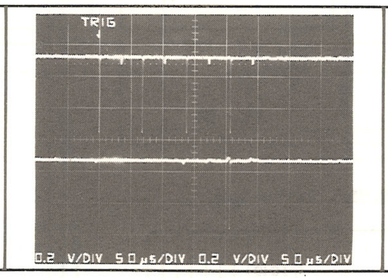
❷, ⑮



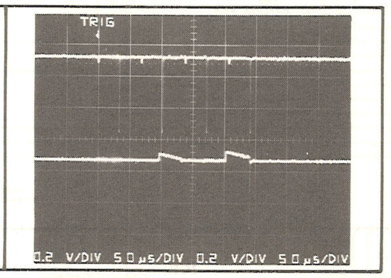
❷, ⑯



❷, ⑰

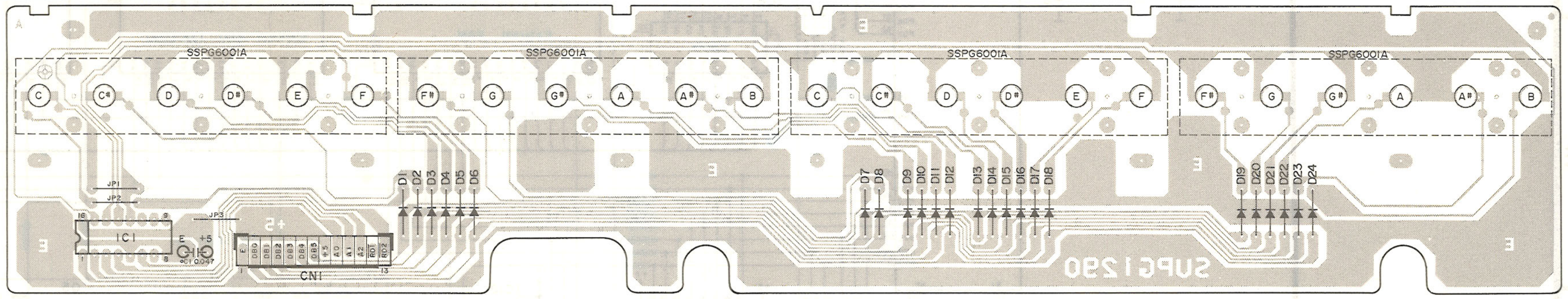


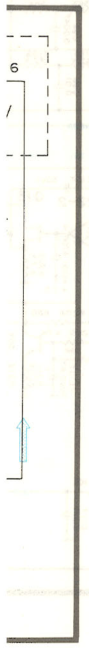
❷, ⑱



SXPG129011

(MKB 3)


SSPG6001A
C C# D D# E F F# G G# A A# B
D1 D2 D3 D4 D5 D6
D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18
D19 D20 D21 D22 D23 D24
IC1
CN1
SUPG129011



NOTES:

MKB 1

- IC'S

IC1: SVIGM74LS138

- DIODES

D13~49: MA150IR

MKB 3

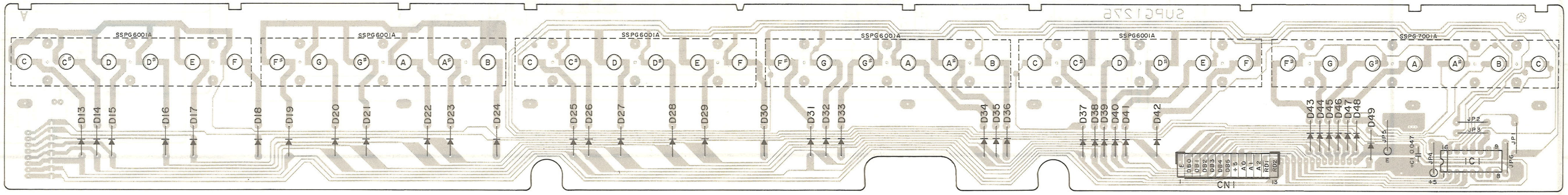
- IC'S

IC1: SVIGM74LS138

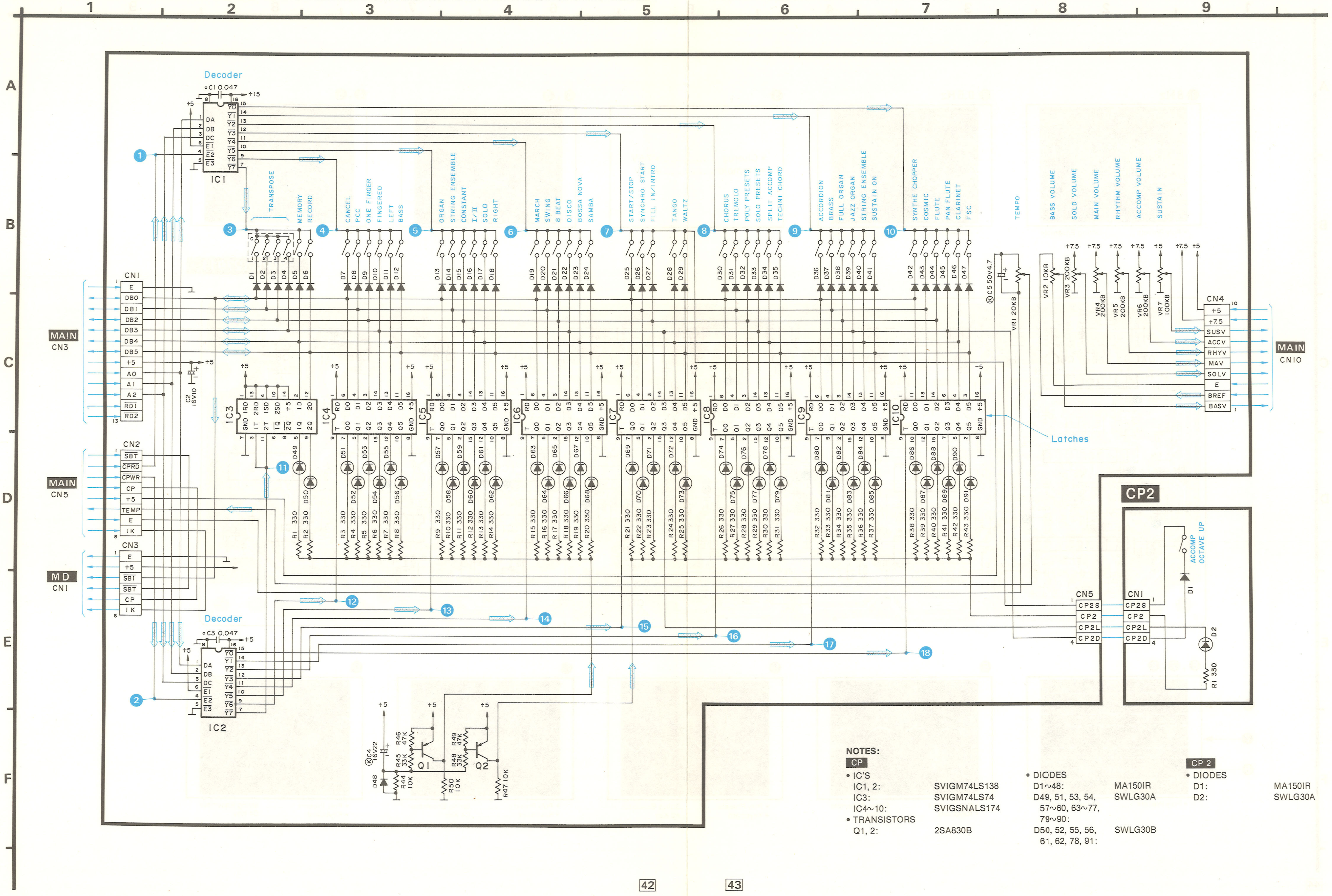
- DIODES

D1~24: MA150IR

SXPG127611 **(MKB 1)**


SSPG6001A
SSPG7001A
C C# D D# E F F# G G# A A# B C
D13 D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24
D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36
D37 D38 D39 D40 D41 D42 D43 D44 D45 D46 D47 D48 D49
IC1
CN1
SUPG127611

CONTROL PANEL CIRCUIT DIAGRAM (CP) (CP2)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Decoder
C1 0.047
+15
+5
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
C3 0.047
DA
DB
DC
E1
E2
E3
Y0
Y1
Y2
Y3
Y4
Y5
Y6
Y7
TRANSPOSE
MEMORY
RECORD
CANCEL
PCC
ONE FINGER
FINGERED
LEFT
BASS
ORGAN
STRING ENSEMBLE
CONSTANT
I/II
SOLO
RIGHT
MARCH
SWING
8 BEAT
DISCO
BOSSA NOVA
SAMBA
START/STOP
SYNCHRO START
FILL IN/INTRO
TANGO
WALTZ
CHORUS
TREMOLO
POLY PRESETS
SOLO PRESETS
SPLIT ACCOMP
TECHNI CHORD
ACCORDION
BRASS
FULL ORGAN
JAZZ ORGAN
STRING ENSEMBLE
SUSTAIN ON
SYNTHE CHOPPER
COSMIC
FLUTE
PAN FLUTE
CLARINET
FSC
TEMPO
BASS VOLUME
SOLO VOLUME
MAIN VOLUME
RHYTHM VOLUME
ACCOMP VOLUME
SUSTAIN
+7.5
C5 50V4.7
VR1 20KB
VR2 10KB
VR3 200KB
VR4 200KB
VR5 200KB
VR6 200KB
VR7 100KB
CN4
+5
+7.5
SUSV
ACCV
RHYV
MAV
SOLV
E
BREF
BASV
MAIN
CN10
CN1
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
A0
A1
A2
RD1
RD2
MAIN
CN3
C2 16V10
CN2
SBT
CPRD
CPWR
CP
+5
TEMP
E
1K
MAIN
CN5
CN3
E
+5
SBI
SBT
CP
1K
MD
CN1
Latches
CP2
ACCOMP OCTAVE UP
D1
D2
R1 330
CN5
CP2S
CP2
CP2L
CP2D
CN1
CP2S
CP2
CP2L
CP2D
C4 16V22
R44 10K
R45 33K
R46 47K
R48 33K
R49 47K
R50 10K
R47 10K
D48
Q1
Q2
-5
R1 330
R2 330
R3 330
R4 330
R5 330
R6 330
R7 330
R8 330
R9 330
R10 330
R11 330
R12 330
R13 330
R14 330
R15 330
R16 330
R17 330
R18 330
R19 330
R20 330
R21 330
R22 330
R23 330
R24 330
R25 330
R26 330
R27 330
R28 330
R29 330
R30 330
R31 330
R32 330
R33 330
R34 330
R35 330
R36 330
R37 330
R38 330
R39 330
R40 330
R41 330
R42 330
R43 330
⑪
⑫
⑬
⑭
⑮
⑯
⑰
⑱

NOTES:

CP

- IC'S

IC1, 2:	SVIGM74LS138
IC3:	SVIGM74LS74
IC4~10:	SVIGSNALS174

- TRANSISTORS

Q1, 2:	2SA830B

- DIODES

D1~48:	MA150IR
D49, 51, 53, 54, 57~60, 63~77, 79~90:	SWLG30A
D50, 52, 55, 56, 61, 62, 78, 91:	SWLG30B

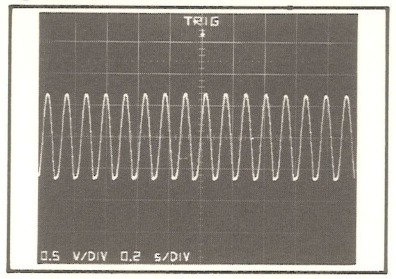
CP 2

- DIODES

D1:	MA150IR
D2:	SWLG30A

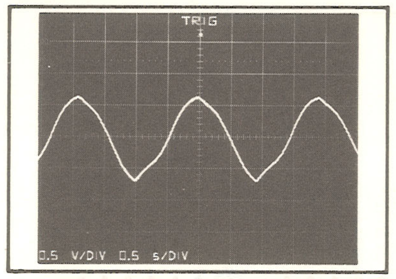
EFFECTOR CIRCUIT BOARD (EFF)

❶ 8Hz



• Poly Presets ....String Ensemble

❷ 0.5Hz

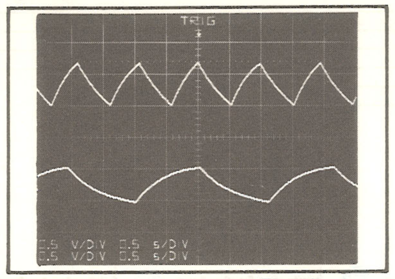


• Poly Presets ....String Ensemble

❸

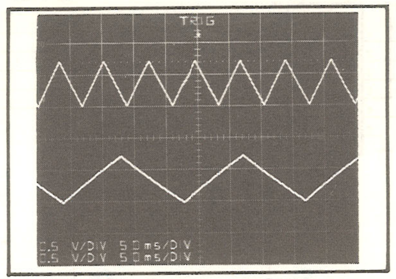
• Chorus .... + 7.5 V
• Tremolo .... + 11 V

❹, ❺



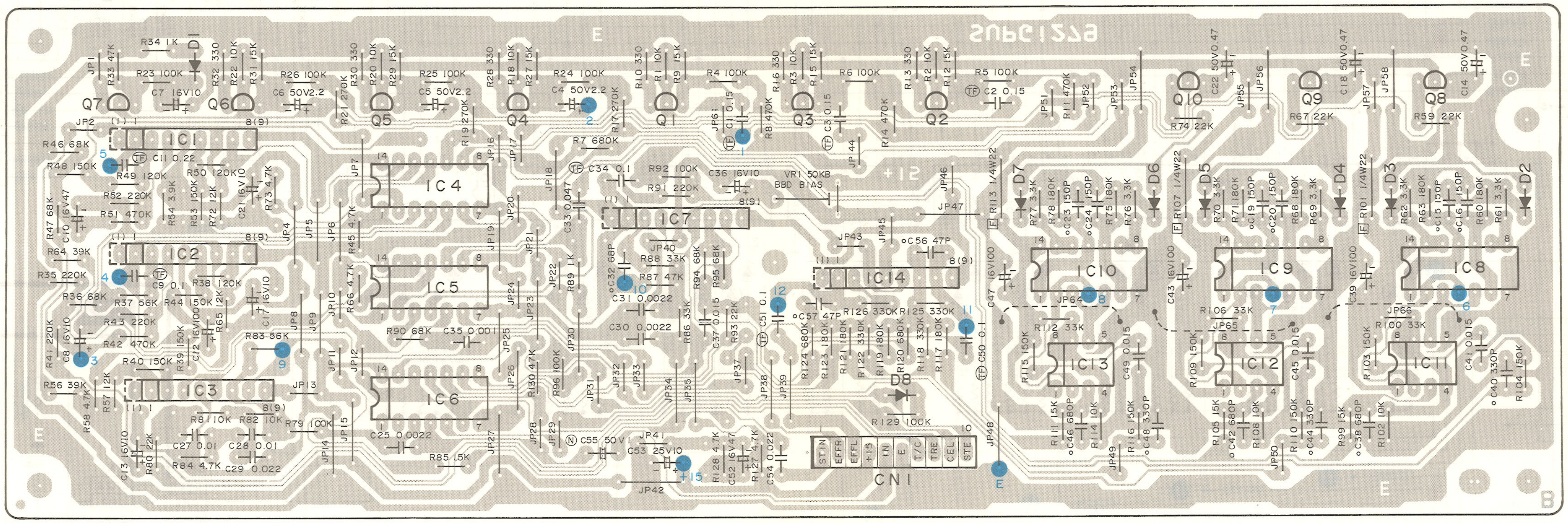
• Effect SW. ....Tremolo

❹, ❺

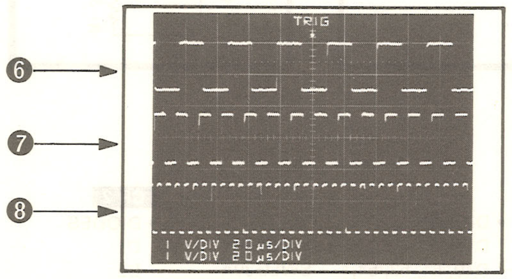


• Effect SW. ....Chorus

SXPG127911

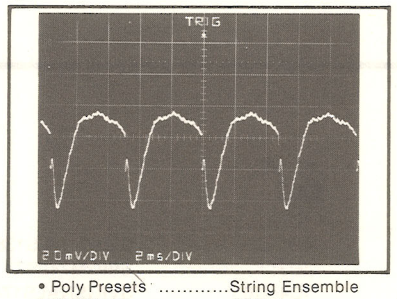

SWPC125
E
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
D1
D2
D3
D4
D5
D6
D7
D8
CN1
VR1 50KB
BBD BIAS
+12
+15
R34 1K
R23 100K
R26 100K
R25 100K
R24 100K
R4 100K
R6 100K
R5 100K
R46 68K
R48 150K
R49 120K
R50 120K
R52 220K
R51 470K
R47 68K
R64 39K
R35 220K
R36 68K
R37 56K
R44 150K
R38 120K
R43 220K
R42 470K
R41 220K
R40 150K
R83 56K
R56 39K
R58 4.7K
R57 12K
R81 10K
R82 10K
R79 100K
R84 4.7K
R85 15K
R90 68K
R92 100K
R91 220K
R88 33K
R87 47K
R7 680K
R74 22K
R67 22K
R59 22K
R106 33K
R100 33K
R112 33K
R129 100K
C7 16V10
C6 50V2.2
C5 50V2.2
C4 50V2.2
C11 0.22
C9 0.1
C8 16V10
C13 16V10
C27 0.01
C28 0.01
C29 0.022
C25 0.0022
C35 0.001
C34 0.1
C36 16V10
C31 0.0022
C30 0.0022
C55 50V1
C53 25V10
C56 47P
C37 47P
C2 0.15
C22 50V0.47
C18 50V0.47
C14 50V0.47
C47 16V100
C43 16V100
C39 16V100
JP1
JP2
JP41
JP42
JP43
JP46
JP47
JP48
STN EFFR EFFL +15 IN E T/C TRE CEL STE
1
2
3
4
5
6
7
8
9
10
11
12
B

❻, ❼, ❽



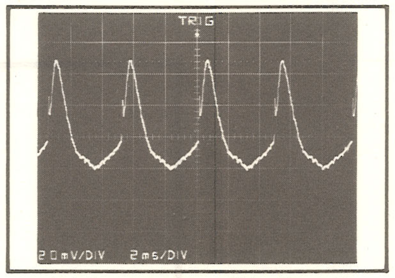
• Poly Presets ....String Ensemble

❾



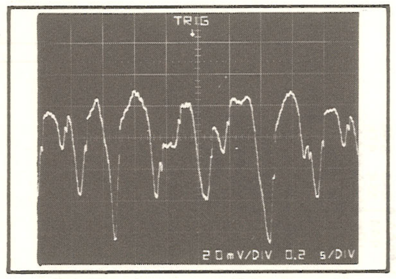
• Poly Presets ....String Ensemble
• Keyboard ....A3 Key

❿



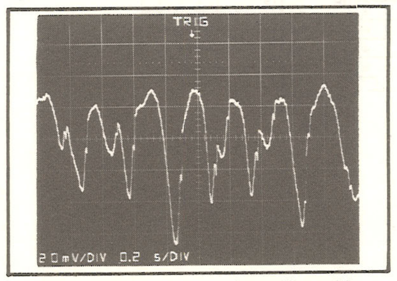
• Poly Presets ....String Ensemble
• Keyboard ....A3 Key

⓫



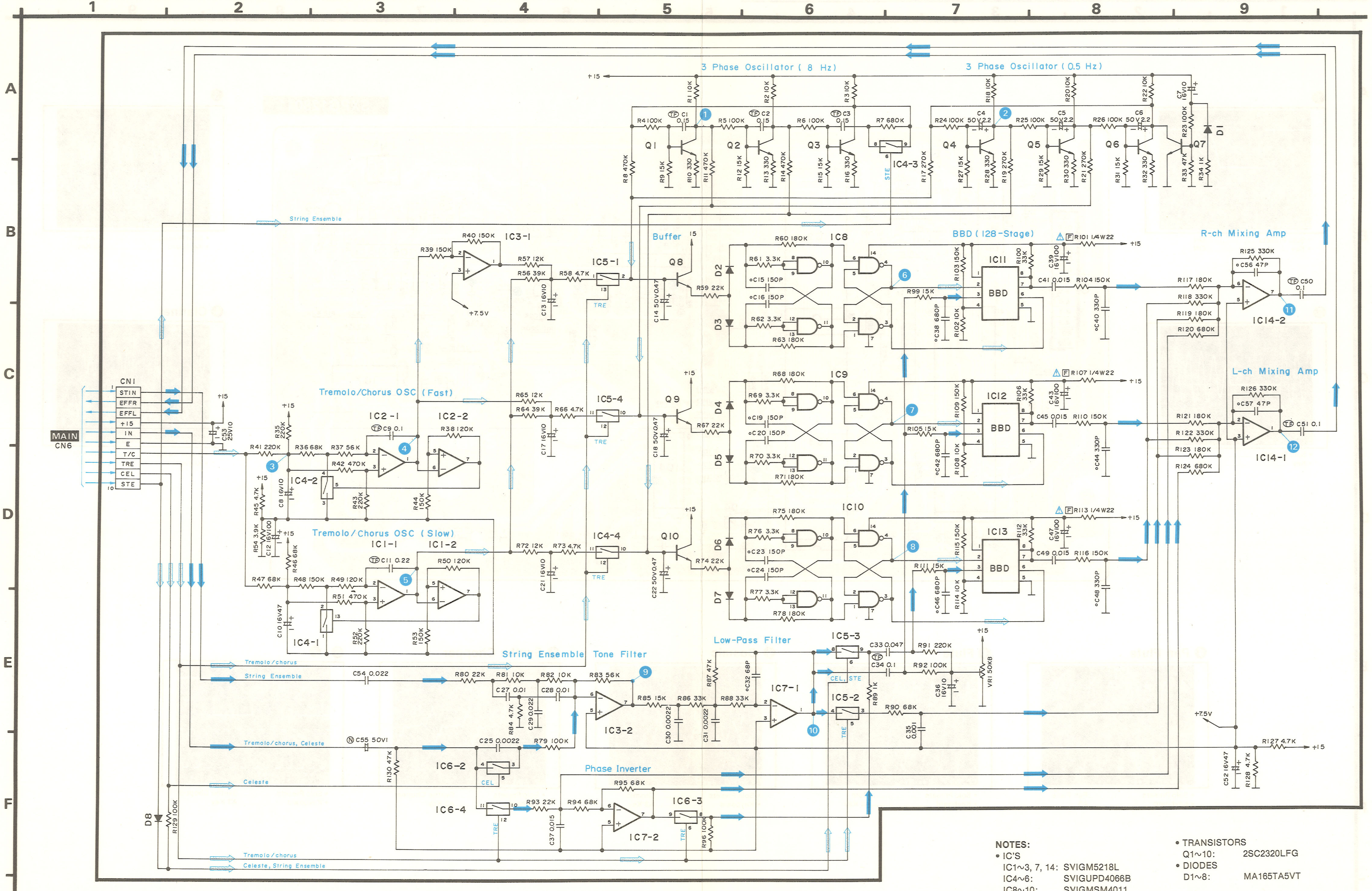
• Poly Presets ....String Ensemble
• Keyboard ....C4 Key

⓬



• Poly Presets ....String Ensemble
• Keyboard ....C4 Key

EFFECTOR CIRCUIT DIAGRAM (EFF)

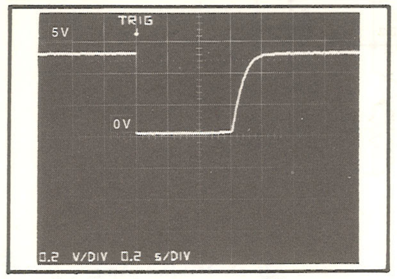

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
3 Phase Oscillator (8 Hz)
3 Phase Oscillator (0.5 Hz)
+15
Q1
Q2
Q3
Q4
Q5
Q6
Q7
D1
IC4-3
STE
String Ensemble
Buffer
Q8
Q9
Q10
IC3-1
IC5-1
IC5-4
IC4-4
TRE
IC8
IC9
IC10
BBD (128-Stage)
IC11
IC12
IC13
BBD
R-ch Mixing Amp
L-ch Mixing Amp
IC14-2
IC14-1
CN1
STIN
EFFR
EFFL
+15
IN
E
T/C
TRE
CEL
STE
MAIN
CN6
Tremolo/Chorus OSC (Fast)
IC2-1
IC2-2
IC4-2
Tremolo/Chorus OSC (Slow)
IC1-1
IC1-2
IC4-1
+7.5V
String Ensemble Tone Filter
Low-Pass Filter
IC5-3
IC5-2
IC7-1
IC3-2
CEL, STE
VR1 50KB
Tremolo/chorus
String Ensemble
Tremolo/chorus, Celeste
Celeste
IC6-2
CEL
Phase Inverter
IC6-4
IC7-2
IC6-3
Tremolo/chorus
Celeste, String Ensemble
D8
R129 100K
R130 47K
C52 16V47
R127 4.7K
R128 4.7K
1
2
3
4
5
6
7
8
9
10
11
12

NOTES:
- IC'S
  - IC1~3, 7, 14: SVIGM5218L
  - IC4~6: SVIGUPD4066B
  - IC8~10: SVIGMSM4011
  - IC11~13: MN3006

- TRANSISTORS
  - Q1~10: 2SC2320LFG
- DIODES
  - D1~8: MA165TA5VT

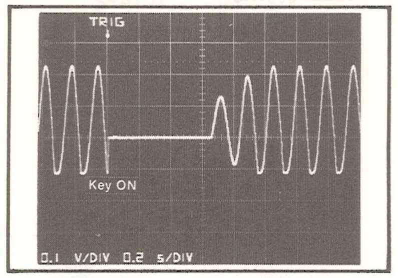
SOLO PRESETS CIRCUIT BOARD (SPS)

①

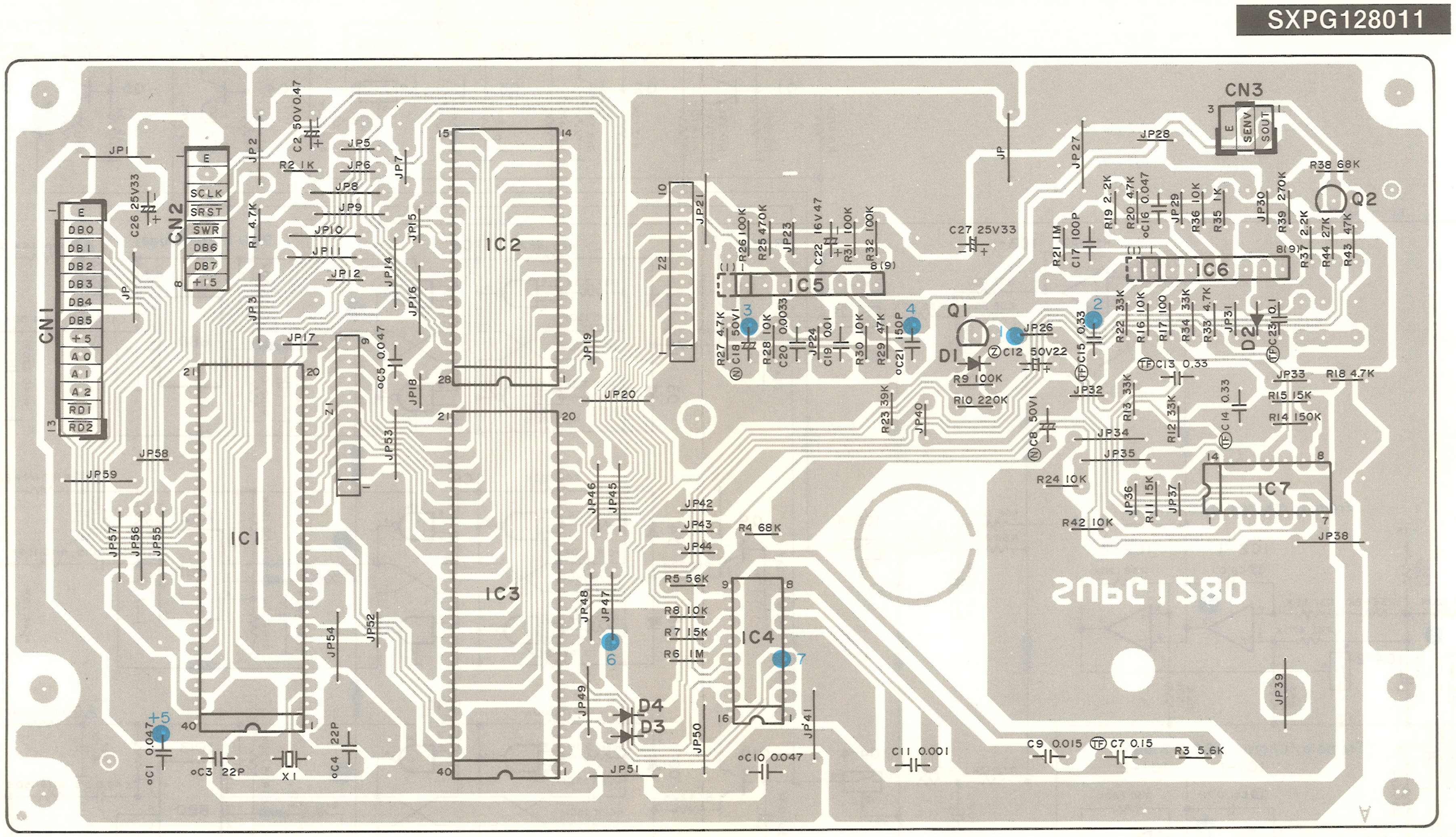


- Solo Presets ....ON
- Key ....ON

②

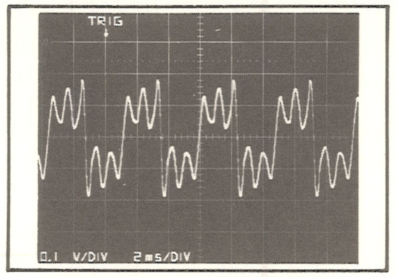


- Solo Presets ....ON
- Key ....ON



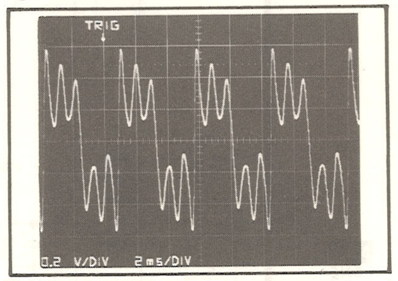
SXPG128011
CN1
CN2
CN3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
Q1
Q2
D1
D2
D3
D4
X1
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
A0
A1
A2
RD1
RD2
SCLK
SRST
SWR
DB6
DB7
+15
SENV
SOUT
C2 50V0.47
C26 25V33
R1 4.7K
R2 1K
C5 0.047
C27 25V33
R26 100K
R25 470K
C22 16V47
R31 100K
R32 100K
R27 4.7K
C18 50V1
R28 10K
C20 0.0033
C19 0.01
R30 10K
R29 47K
C21 150P
R21 1M
C17 100P
R19 2.2K
R20 4.7K
C16 0.047
R36 10K
R35 1K
R39 270K
R37 2.2K
R44 22K
R43 47K
R38 68K
R22 33K
R16 10K
R17 100
R34 33K
R33 4.7K
C23 0.1
C15 0.33
C12 50V22
R9 100K
R10 220K
R23 39K
C8 50V1
C13 0.33
R13 33K
R12 33K
C14 0.33
R18 4.7K
R15 15K
R14 150K
R24 10K
R11 15K
R42 10K
R4 68K
R5 56K
R8 10K
R7 15K
R6 1M
C1 0.047
C3 22P
C4 22P
C10 0.047
C11 0.001
C9 0.015
C7 0.15
R3 5.6K
JP1
JP2
JP3
JP5
JP6
JP7
JP8
JP9
JP10
JP11
JP12
JP14
JP15
JP16
JP17
JP18
JP19
JP20
JP21
JP23
JP24
JP26
JP27
JP28
JP29
JP30
JP31
JP32
JP33
JP34
JP35
JP36
JP37
JP38
JP39
JP40
JP41
JP42
JP43
JP44
JP45
JP46
JP47
JP48
JP49
JP50
JP51
JP52
JP53
JP54
JP55
JP56
JP57
JP58
JP59
+5
1
2
3
4
6
7
SUPG1280

③



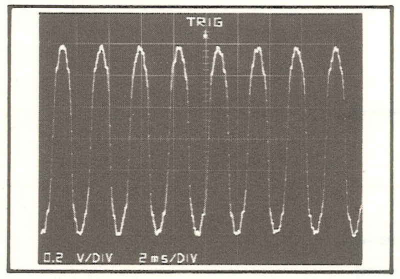
- Solo Presets ....Clarinet
- Keyboard ....A3 Key

④ Clarinet



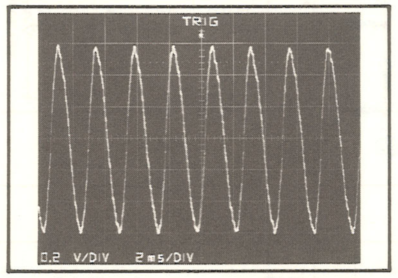
- Solo Presets ....Clarinet
- Keyboard ....A3 Key

④ Pan Flute



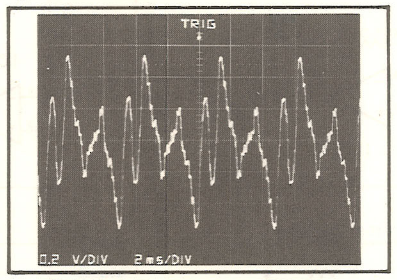
- Solo Presets ....Pan Flute
- Keyboard A3

④ Flute



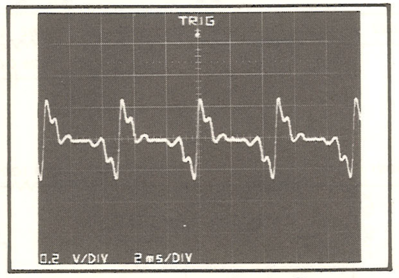
- Solo Presets ....Flute
- Keyboard ....A3 Key

④ Cosmic



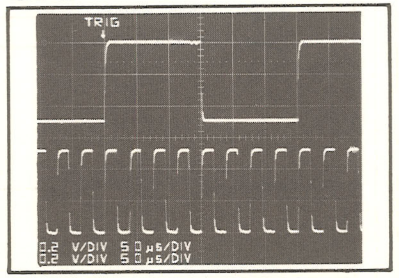
- Solo Presets ....Cosmic
- Keyboard ....A3 Key

④ Synthe Chopper



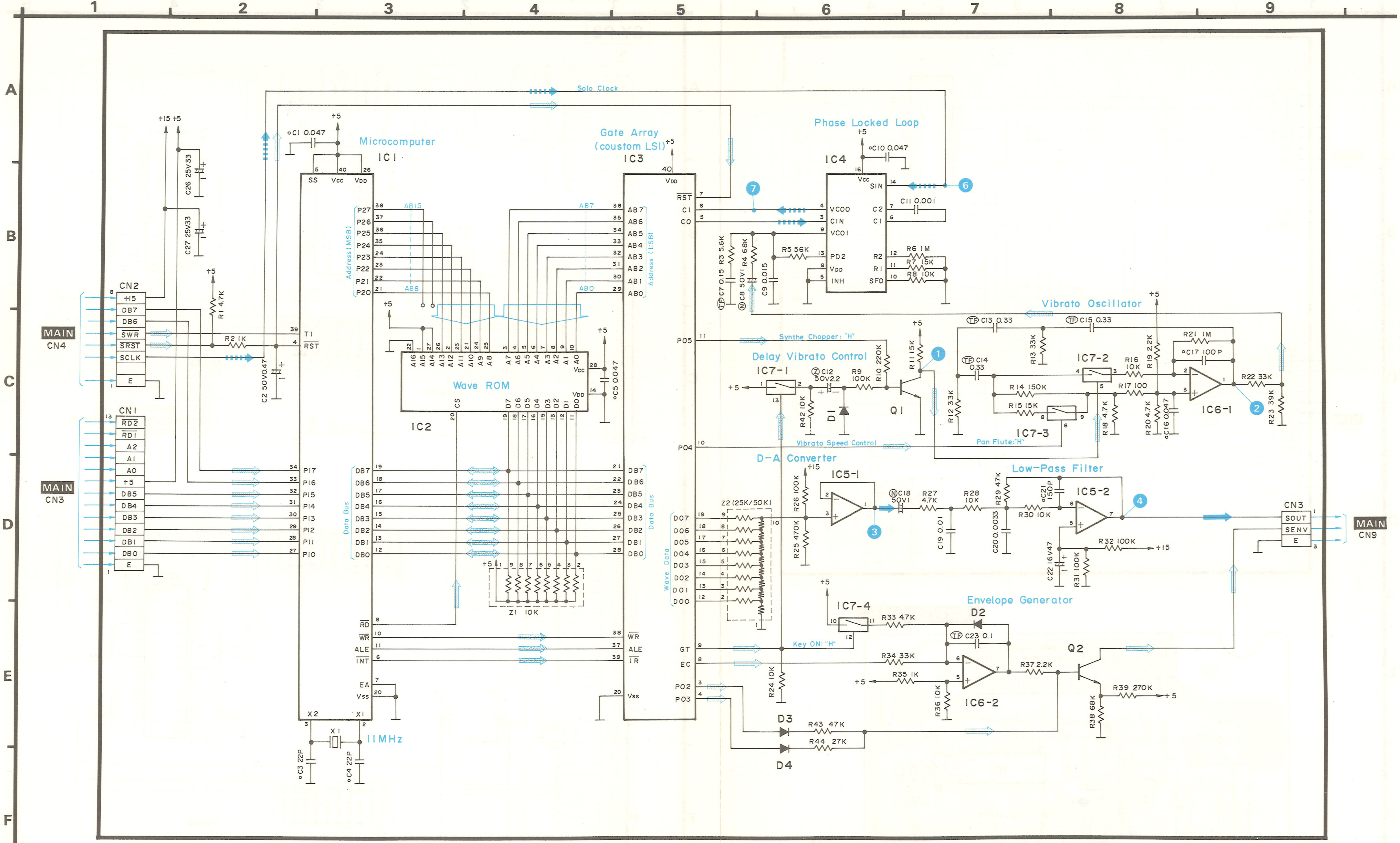
- Solo Presets ....Synthe Chopper
- Keyboard ....A3 Key

⑥, ⑦



- Solo Presets ....Synthe Chopper
- Keyboard ....A3 Key

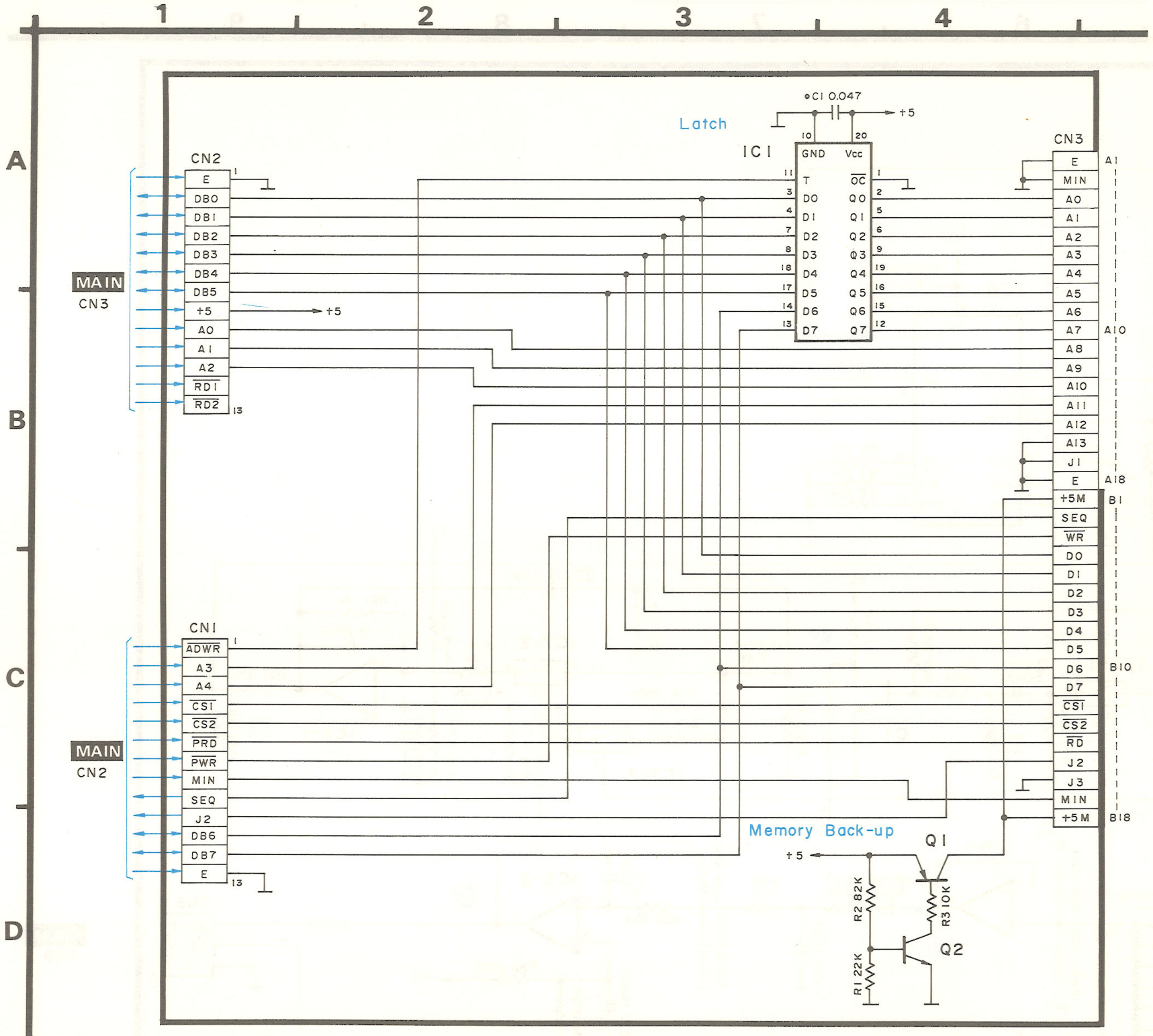
SOLO PRESETS CIRCUIT DIAGRAM (SPS)


1 2 3 4 5 6 7 8 9
A B C D E F
Solo Clock
Microcomputer
IC1
Gate Array
(coustom LSI)
IC3
Phase Locked Loop
IC4
Wave ROM
IC2
Address (MSB)
Address (LSB)
Data Bus
Wave Data
MAIN
CN4
CN2
MAIN
CN3
CN1
+15
DB7
DB6
SWR
SRST
SCLK
E
RD2
RD1
A2
A1
A0
+5
DB5
DB4
DB3
DB2
DB1
DB0
C26 25V33
C27 25V33
R1 4.7K
R2 1K
C2 50V0.47
C1 0.047
C3 22P
C4 22P
X1
11MHz
Z1 10K
C10 0.047
C11 0.001
R3 5.6K
R4 68K
C7 0.15
C8 50V1
C9 0.015
R5 56K
R6 1M
R7 15K
R8 10K
C5 0.047
Synthe Chopper: "H"
Delay Vibrato Control
IC7-1
C12 50V2.2
R9 100K
R10 220K
R11 15K
R42 10K
D1
Q1
Vibrato Speed Control
Vibrato Oscillator
C13 0.33
C15 0.33
C14 0.33
R12 33K
R13 33K
IC7-2
IC7-3
R14 150K
R15 15K
R16 10K
R17 100
R18 4.7K
R19 2.2K
R20 4.7K
C16 0.047
R21 1M
C17 100P
IC6-1
R22 33K
R23 39K
Pan Flute: "H"
D-A Converter
IC5-1
Z2 (25K/50K)
R25 470K
R26 100K
C18 50V1
R27 4.7K
C19 0.01
R28 10K
C20 0.0033
Low-Pass Filter
R29 47K
C21 150P
R30 10K
IC5-2
R31 100K
R32 100K
C22 16V47
CN3
SOUT
SENV
E
MAIN
CN9
Envelope Generator
IC7-4
D2
R33 47K
C23 0.1
Key ON: "H"
R34 33K
R35 1K
R36 10K
IC6-2
R37 2.2K
Q2
R38 68K
R39 270K
R24 10K
D3
D4
R43 47K
R44 27K
1 2 3 4 5 6 7

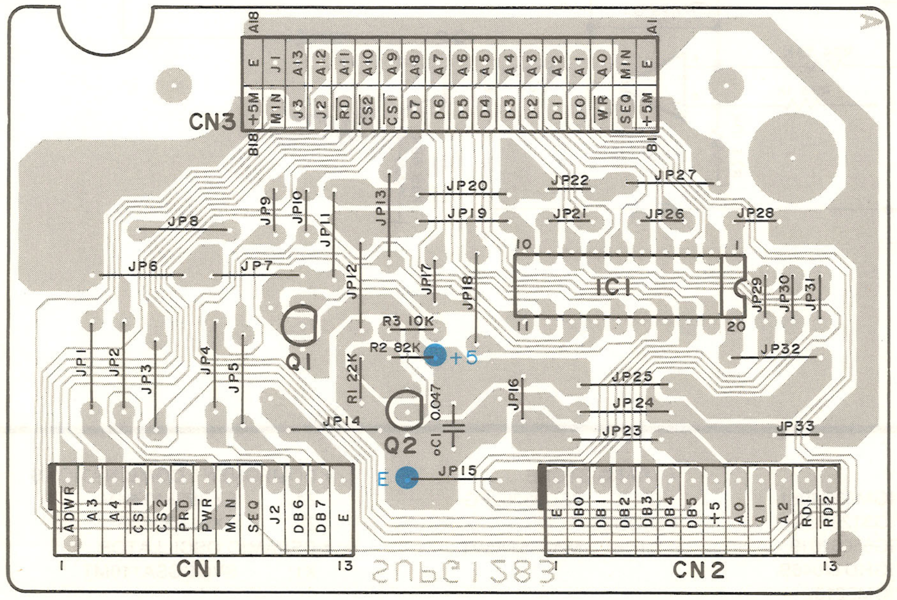
NOTES:

- IC'S
  - IC1: SVIGM80C4981
  - IC2: SVIG3128PC91
  - IC3: SVIG65002019
  - IC4: SVIGHD14046B
  - IC5, 6: SVIGM5218L
  - IC7: SVIGUPD4066B
- TRANSISTORS
  - Q1, 2: 2SC2320LFG
- DIODES
  - D1~4: MA165TA5VT
- COMPONENT COMBINATIONS
  - Z1: EXBP88103MM
  - Z2: EXBLD8253G
- CERAMIC OSCILLATOR
  - X1: SVQGCSA110MT

MEMORY PACK CONTROL CIRCUIT (MPC)


1
2
3
4
A
B
C
D
Latch
IC1
C1 0.047
+5
GND
Vcc
CN2
CN3
MAIN CN3
MAIN CN2
CN1
E
DB0
DB1
DB2
DB3
DB4
DB5
+5
A0
A1
A2
RD1
RD2
ADWR
A3
A4
CS1
CS2
PRD
PWR
MIN
SEQ
J2
DB6
DB7
T
OC
D0
D1
D2
D3
D4
D5
D6
D7
Q0
Q1
Q2
Q3
Q4
Q5
Q6
Q7
A5
A6
A7
A8
A9
A10
A11
A12
A13
J1
+5M
WR
RD
J3
A1
A10
A18
B1
B10
B18
Memory Back-up
Q1
Q2
R2 82K
R3 10K
R1 22K

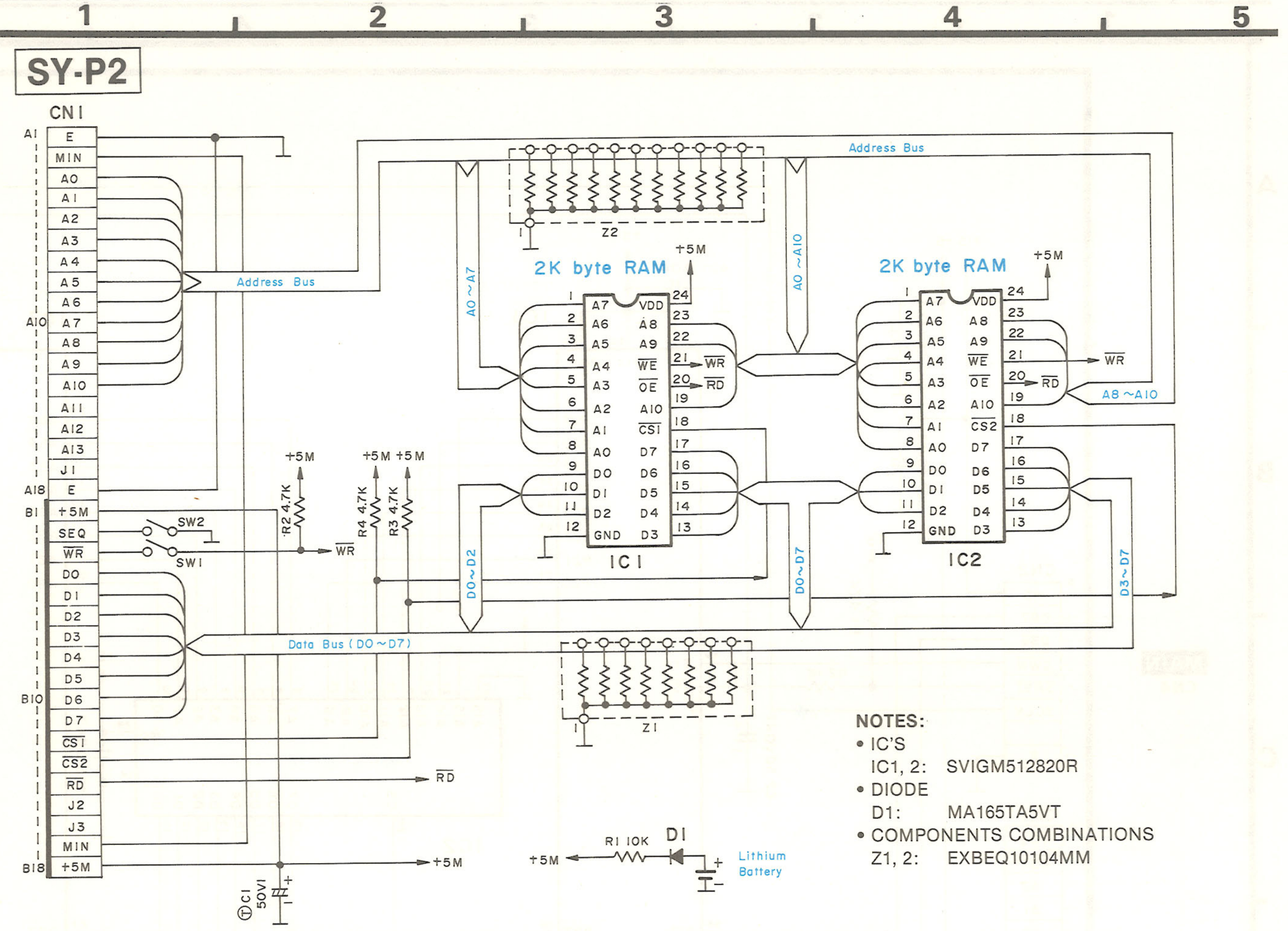
SXPG128311


CN3
CN1
CN2
IC1
Q1
Q2
R3 10K
R2 82K
R1 22K
C1 0.047
+5
E
JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JP9
JP10
JP11
JP12
JP13
JP14
JP15
JP16
JP17
JP18
JP19
JP20
JP21
JP22
JP23
JP24
JP25
JP26
JP27
JP28
JP29
JP30
JP31
JP32
JP33
A18
B18
B1
A1
1
13
10
20
SXPG128311

NOTES:
- IC'S
  IC1: SVIGTC40H374
- TRANSISTORS
  Q1: 2SA1015GR
  Q2: 2SC2320LFG

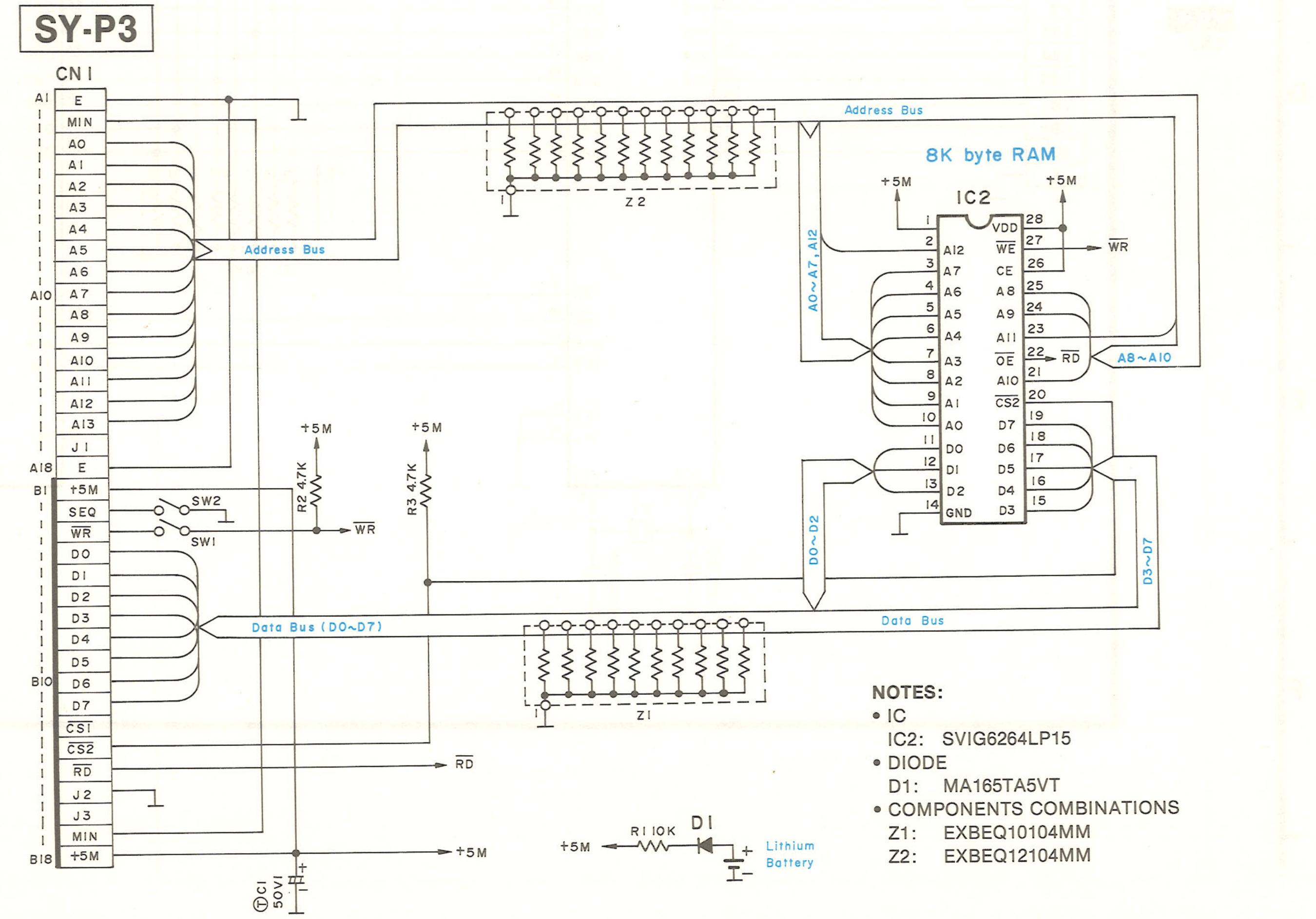
MEMORY PACK CIRCUIT DIAGRAM (MP)

SY-P2


1
2
3
4
5
A
B
C
CN1
Address Bus
Z2
2K byte RAM
+5M
IC1
IC2
A0~A7
A0~A10
A8~A10
D0~D2
D0~D7
D3~D7
Data Bus (D0~D7)
Z1
SW1
SW2
R2 4.7K
R4 4.7K
R3 4.7K
WR
RD
C1 50V1
R1 10K
D1
Lithium Battery
VDD
WE
OE
CS1
CS2
GND

NOTES:
- IC'S
  IC1, 2: SVIGM512820R
- DIODE
  D1: MA165TA5VT
- COMPONENTS COMBINATIONS
  Z1, 2: EXBEQ10104MM

SY-P3


D
E
F
CN1
Address Bus
Z2
8K byte RAM
+5M
IC2
A0~A7, A12
A8~A10
D0~D2
D3~D7
Data Bus (D0~D7)
Data Bus
Z1
SW1
SW2
R2 4.7K
R3 4.7K
WR
RD
C1 50V1
R1 10K
D1
Lithium Battery
VDD
WE
CE
OE
CS2
GND

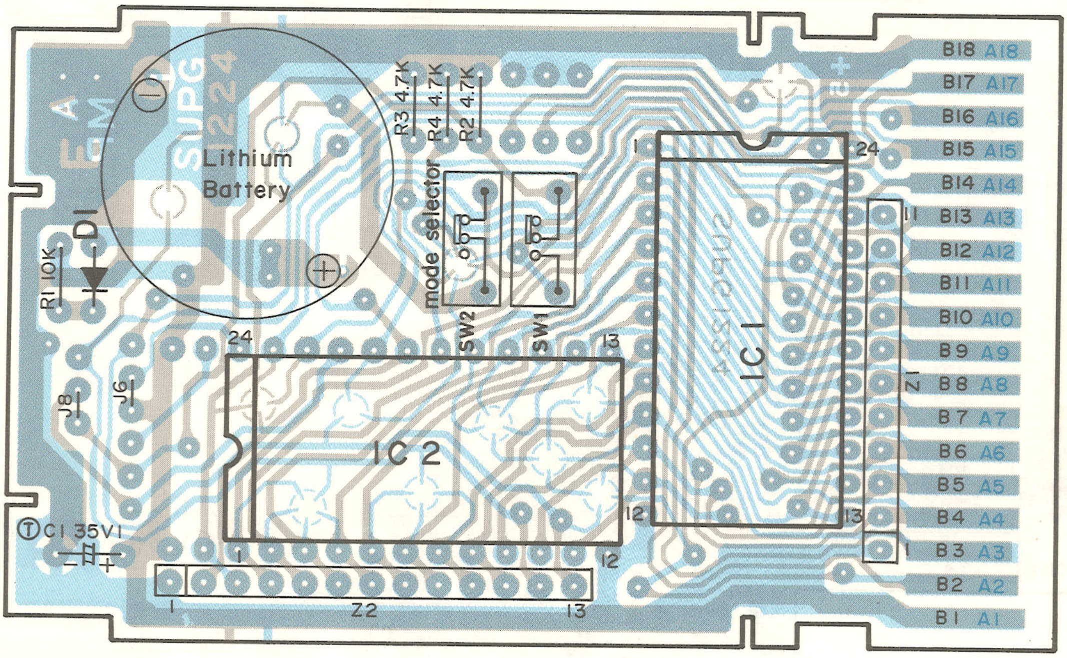
NOTES:
- IC
  IC2: SVIG6264LP15
- DIODE
  D1: MA165TA5VT
- COMPONENTS COMBINATIONS
  Z1: EXBEQ10104MM
  Z2: EXBEQ12104MM

MEMORY PACK CIRCUIT BOARD (MP)

Circuit view on top of P.C.B.

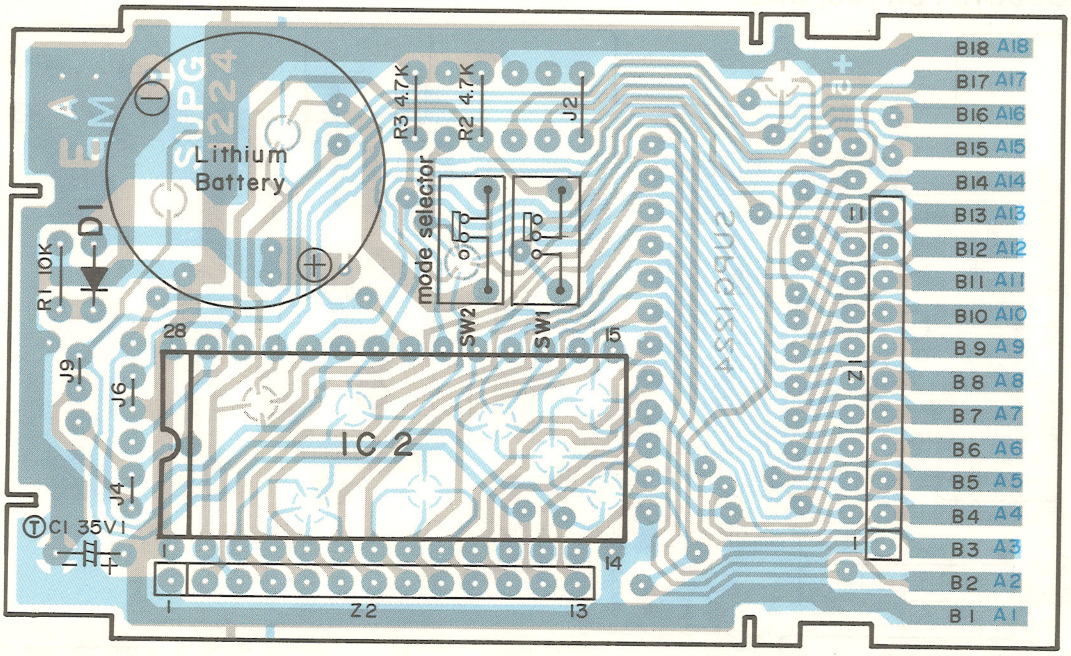
SY-P2

SXPG12241


1
2
3
4
5
A
B
C
SUPG 224
Lithium Battery
R3 4.7K
R4 4.7K
R2 4.7K
mode selector
SW2
SW1
D1
R1 10K
J8
J6
C1 35V1
24
13
12
1
IC 2
IC 1
24
12
13
Z1
11
1
Z2
1
13
B18 A18
B17 A17
B16 A16
B15 A15
B14 A14
B13 A13
B12 A12
B11 A11
B10 A10
B9 A9
B8 A8
B7 A7
B6 A6
B5 A5
B4 A4
B3 A3
B2 A2
B1 A1

SY-P3

SXPG12242

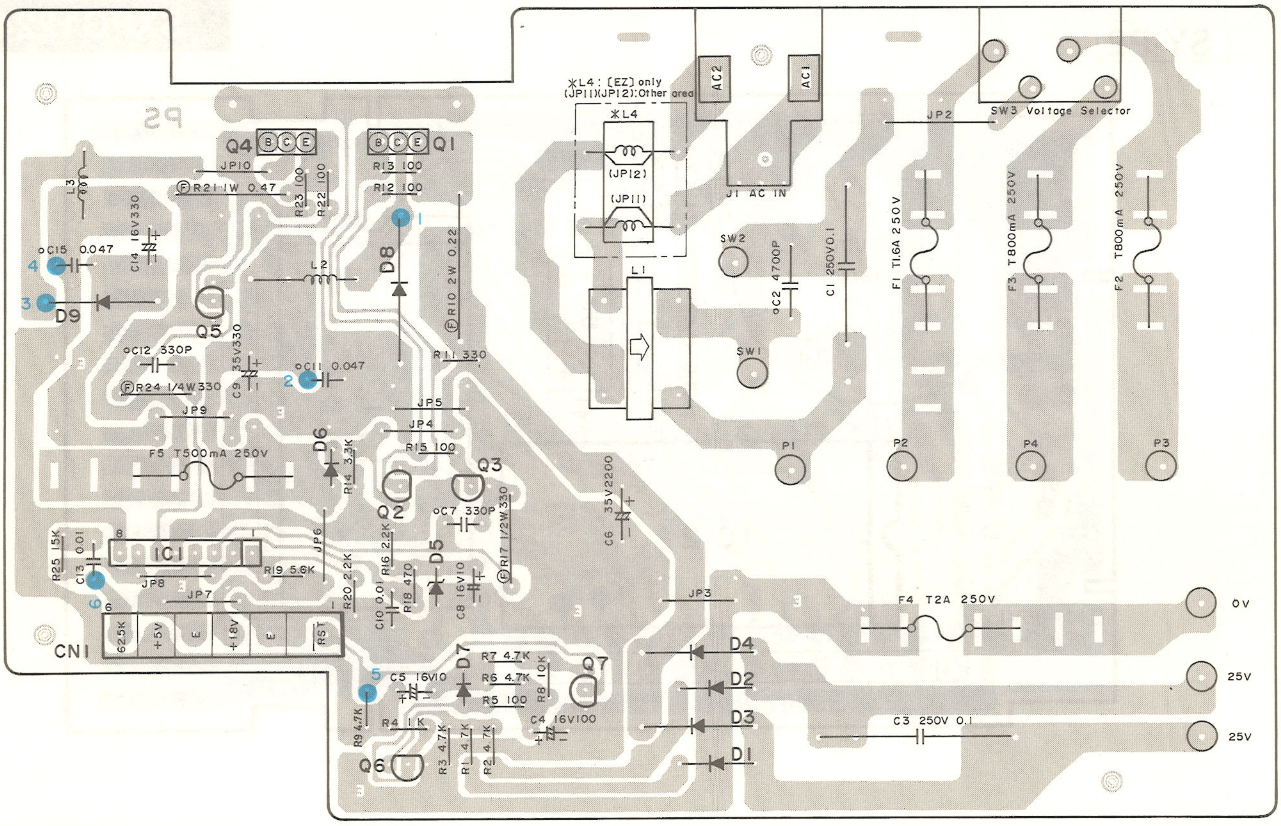

D
E
F
SUPG 224
Lithium Battery
R3 4.7K
R2 4.7K
J2
mode selector
SW2
SW1
D1
R1 10K
J9
J6
J4
C1 35V1
28
15
14
1
IC 2
Z1
11
1
Z2
1
13
B18 A18
B17 A17
B16 A16
B15 A15
B14 A14
B13 A13
B12 A12
B11 A11
B10 A10
B9 A9
B8 A8
B7 A7
B6 A6
B5 A5
B4 A4
B3 A3
B2 A2
B1 A1

POWER SUPPLY CIRCUIT BOARD (PS)

1
2
3
4
5
A
B
C
D
E
F

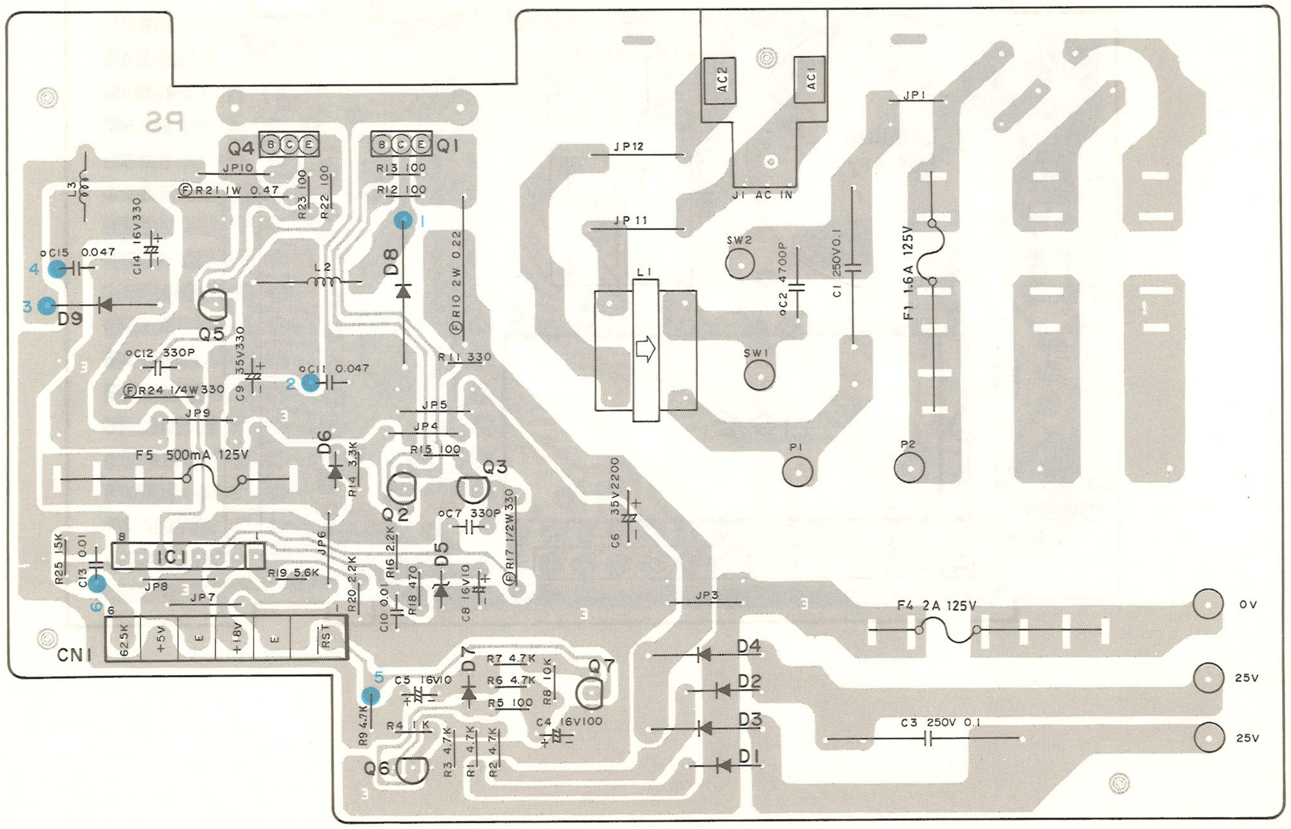
∗ Products for [EZ] only

SXPG128411 **SXPG128451**

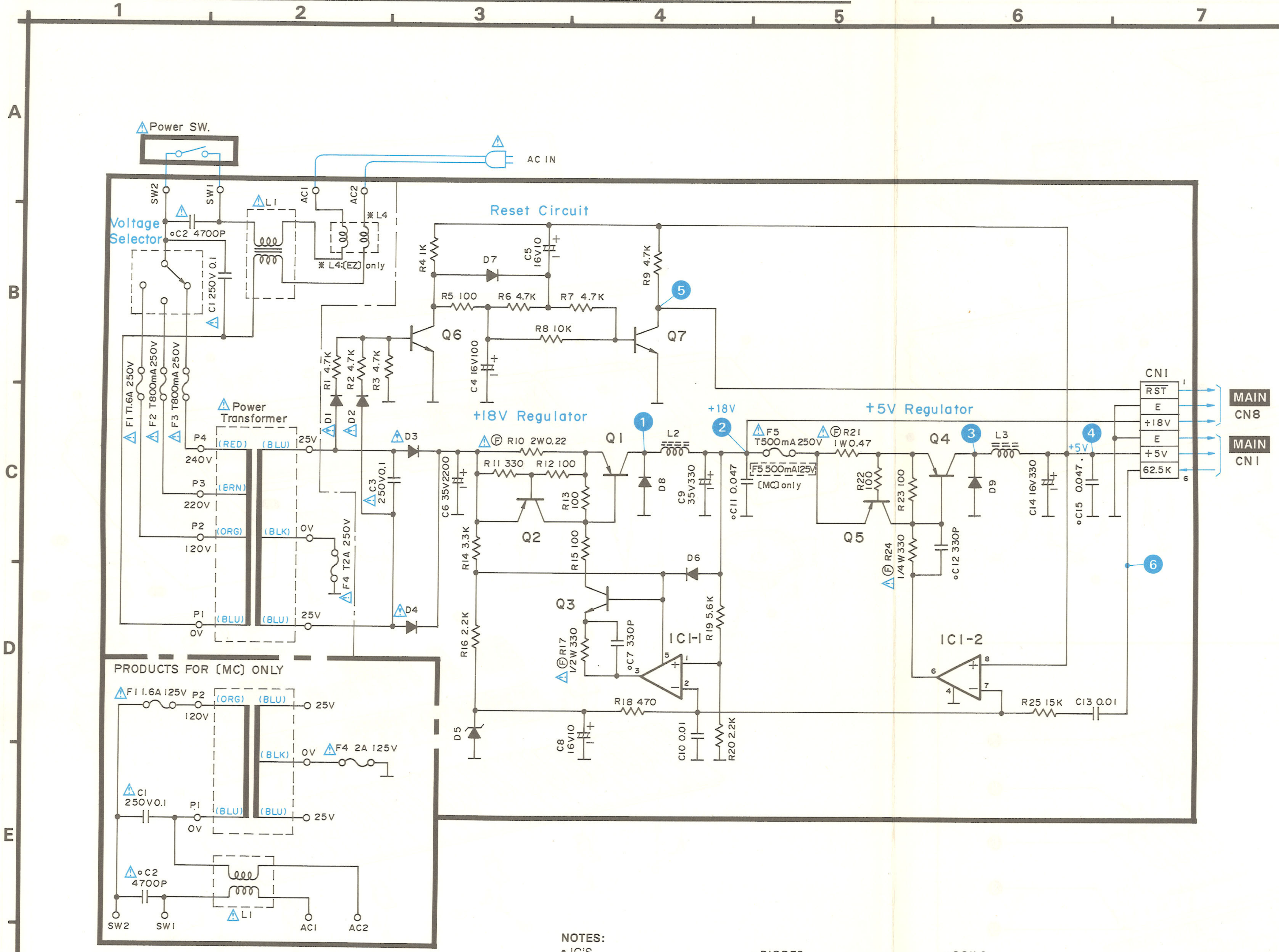

PS
Q4
B C E
Q1
JP10
F R21 1W 0.47
R23 100
R22 100
R13 100
R12 100
L3
C14 16V330
C15 0.047
D9
Q5
L2
D8
R10 2W 0.22
C12 330P
C9 35V330
C11 0.047
R24 1/4W330
R11 330
JP9
JP5
JP4
F5 T500mA 250V
D6
R14 3.3K
R15 100
Q3
Q2
C7 330P
R17 1/2W330
C6 35V2200
R25 15K
C13 0.01
IC1
JP6
R16 2.2K
D5
R19 5.6K
JP8
JP7
R20 2.2K
C10 0.01
R18 470
C8 16V10
JP3
CN1
625K
+5V
E
+18V
E
RST
D7
R7 4.7K
R6 4.7K
R5 100
R8 10K
Q7
C5 16V10
R9 4.7K
R4 1K
C4 16V100
R3 4.7K
R1 4.7K
R2 4.7K
Q6
D4
D2
D3
D1
F4 T2A 250V
C3 250V 0.1
0V
25V
25V
∗L4 : [EZ] only
(JP11)(JP12):Other area
∗L4
(JP12)
(JP11)
L1
AC2
AC1
J1 AC IN
SW2
C2 4700P
C1 250V0.1
SW1
JP2
SW3 Voltage Selector
F1 T1.6A 250V
F3 T800mA 250V
F2 T800mA 250V
P1
P2
P4
P3
1
2
3
4
5
6

■ PRODUCTS FOR [MC] ONLY

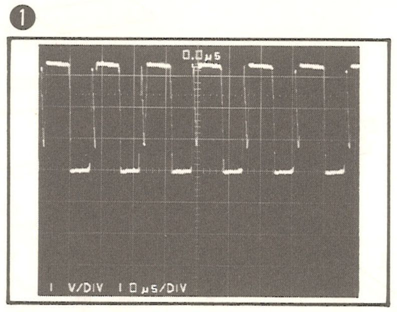
SXPG128421


PS
Q4
B C E
Q1
JP10
F R21 1W 0.47
R23 100
R22 100
R13 100
R12 100
L3
C14 16V330
C15 0.047
D9
Q5
L2
D8
R10 2W 0.22
C12 330P
C9 35V330
C11 0.047
R24 1/4W330
R11 330
JP9
JP5
JP4
F5 500mA 125V
D6
R14 3.3K
R15 100
Q3
Q2
C7 330P
R17 1/2W330
C6 35V2200
R25 15K
C13 0.01
IC1
JP6
R16 2.2K
D5
R19 5.6K
JP8
JP7
R20 2.2K
C10 0.01
R18 470
C8 16V10
JP3
CN1
625K
+5V
E
+18V
E
RST
D7
R7 4.7K
R6 4.7K
R5 100
R8 10K
Q7
C5 16V10
R9 4.7K
R4 1K
C4 16V100
R3 4.7K
R1 4.7K
R2 4.7K
Q6
D4
D2
D3
D1
F4 2A 125V
C3 250V 0.1
0V
25V
25V
JP12
JP11
L1
AC2
AC1
J1 AC IN
SW2
C2 4700P
C1 250V0.1
SW1
JP1
F1 1.6A 125V
P1
P2
1
2
3
4
5
6

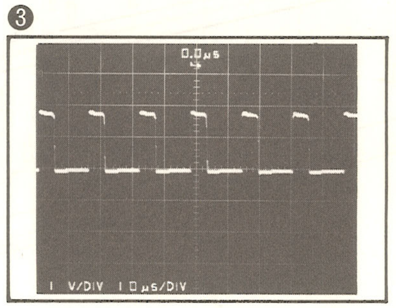
POWER SUPPLY CIRCUIT DIAGRAM (PS)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Power SW.
AC IN
SW2
SW1
AC1
AC2
L1
※L4
※L4: EZ only
Voltage Selector
○C2 4700P
C1 250V 0.1
Reset Circuit
R4 1K
D7
C5 16V10
R9 4.7K
R5 100
R6 4.7K
R7 4.7K
R8 10K
Q6
Q7
C4 16V100
R1 4.7K
R2 4.7K
R3 4.7K
D1
D2
F1 T1.6A 250V
F2 T800mA 250V
F3 T800mA 250V
Power Transformer
P4
240V
P3
220V
P2
120V
P1
0V
(RED)
(BLU)
(BRN)
(ORG)
(BLK)
25V
0V
D3
D4
C3 250V0.1
F4 T2A 250V
C6 35V2200
+18V Regulator
R10 2W0.22
R11 330
R12 100
Q1
Q2
R13 100
D8
L2
C9 35V330
+18V
+5V Regulator
F5 T500mA 250V
F5 500mA 125V
(MC) only
C11 0.047
R21 1W0.47
Q4
L3
R22 100
R23 100
D9
C14 16V330
C15 0.047
Q5
R24 1/4W 330
○C12 330P
R14 3.3K
R15 100
D6
Q3
R16 2.2K
R17 1/2W 330
○C7 330P
IC1-1
R19 5.6K
IC1-2
R18 470
D5
C8 16V10
C10 0.01
R20 2.2K
R25 15K
C13 0.01
CN1
RST
E
+18V
E
+5V
62.5K
+5V
MAIN CN8
MAIN CN1
PRODUCTS FOR (MC) ONLY
F1 1.6A 125V
F4 2A 125V
C1 250V0.1
○C2 4700P
L1
1
2
3
4
5
6

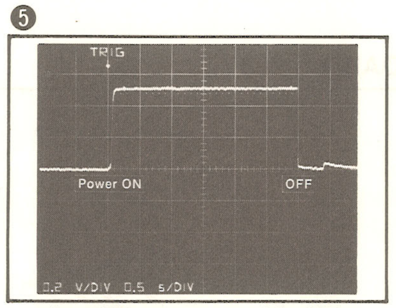
①



③

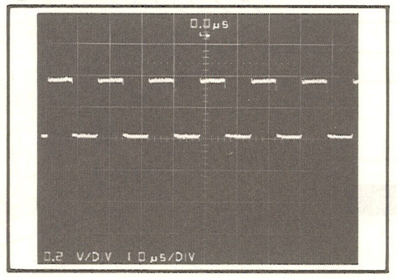


⑤



- Power SW. ....ON—OFF

⑥ **Clock (62.5kHz)**



NOTES:

- IC'S

IC1:	SVIGM51207L

- TRANSISTORS

Q1:	2SB945PQ
Q2, 5:	2SA933STRS
Q3, 6, 7:	2SC2320LFG
Q4:	2SB953APQ

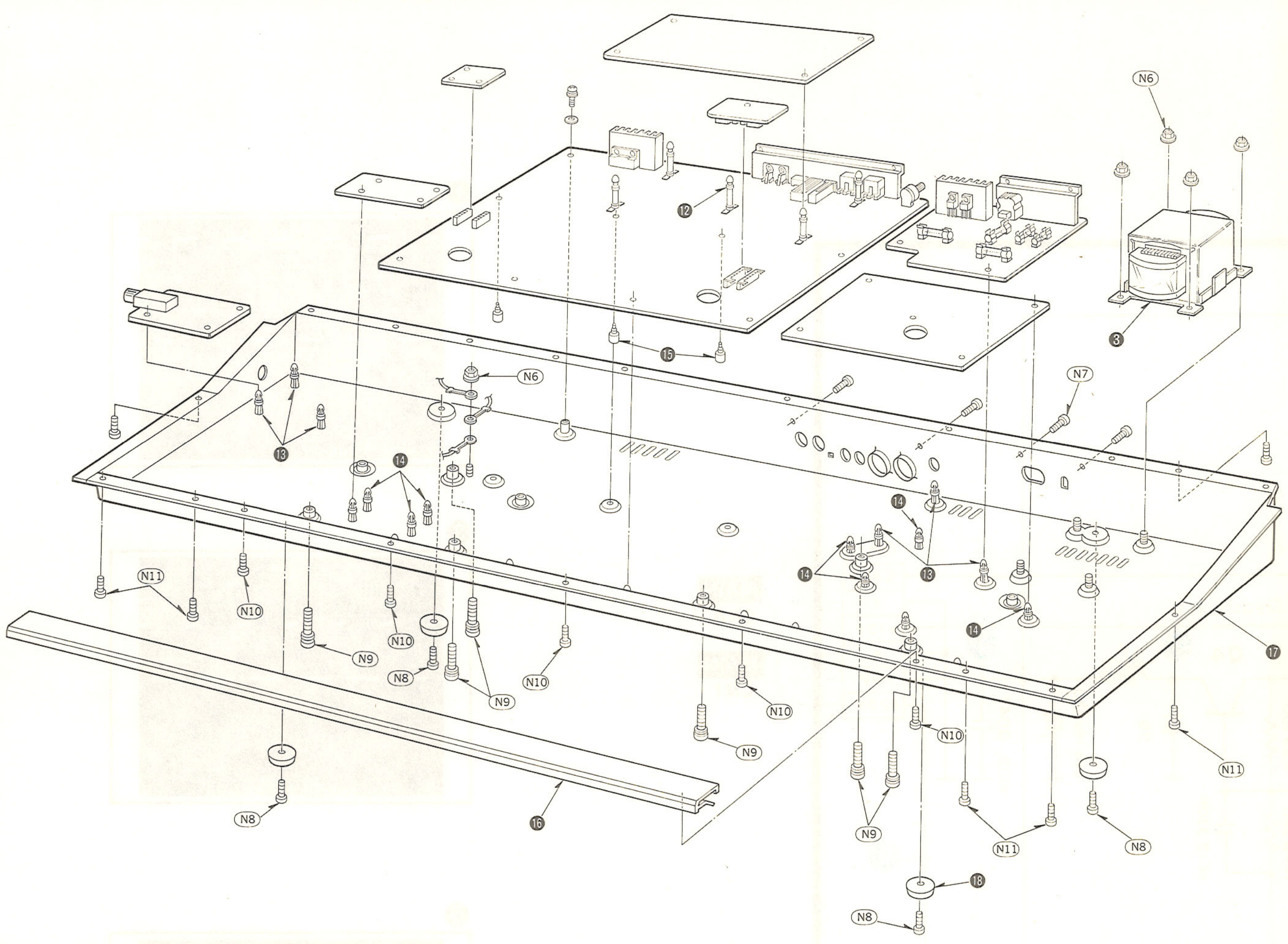
- DIODES

D1, 2:	SVDGSM1A02LF
D3, 4:	SVDS2V20
D5:	MA4051MTA
D6, 7:	MA165TA5VT
D8:	SVDD3S4M
D9:	SVDGRK14

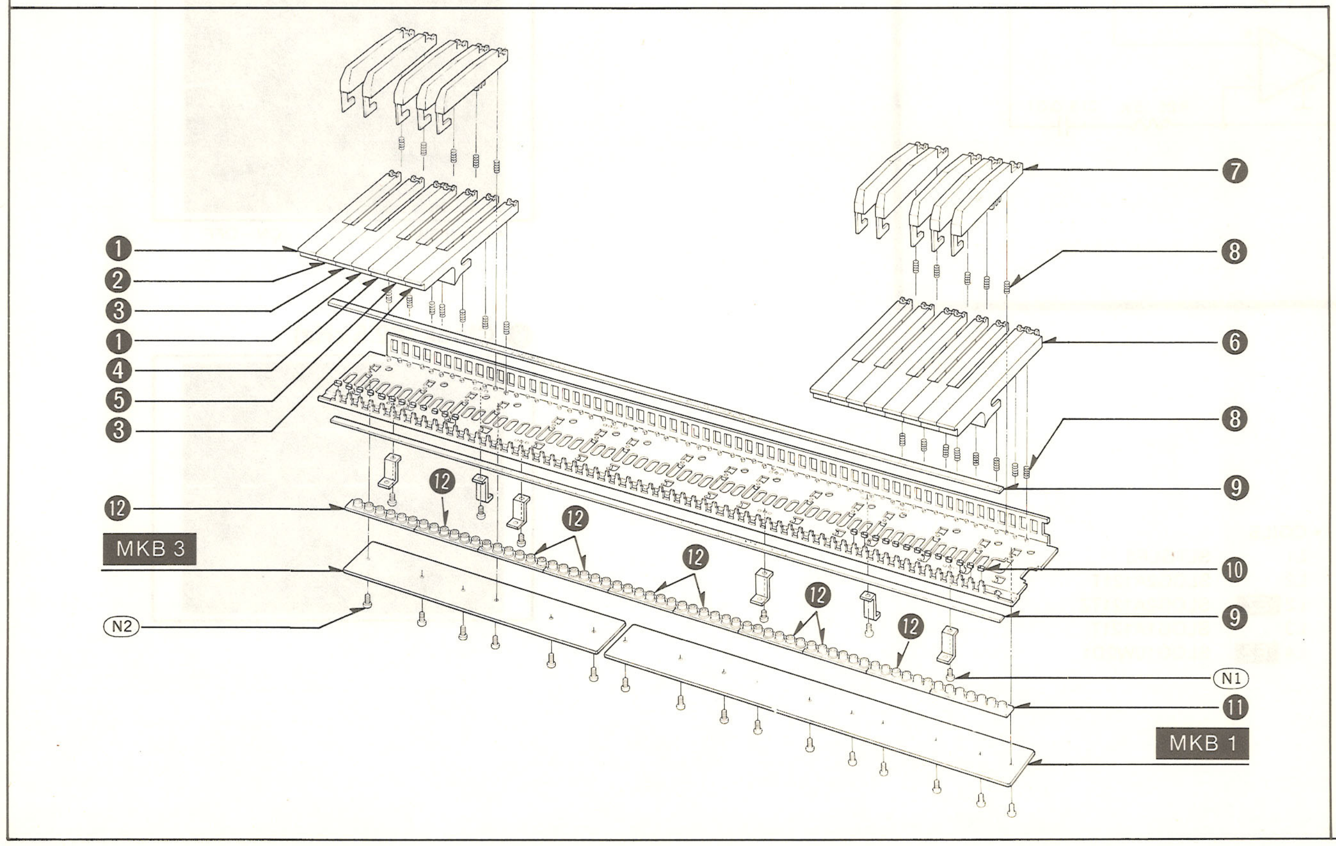
- COILS

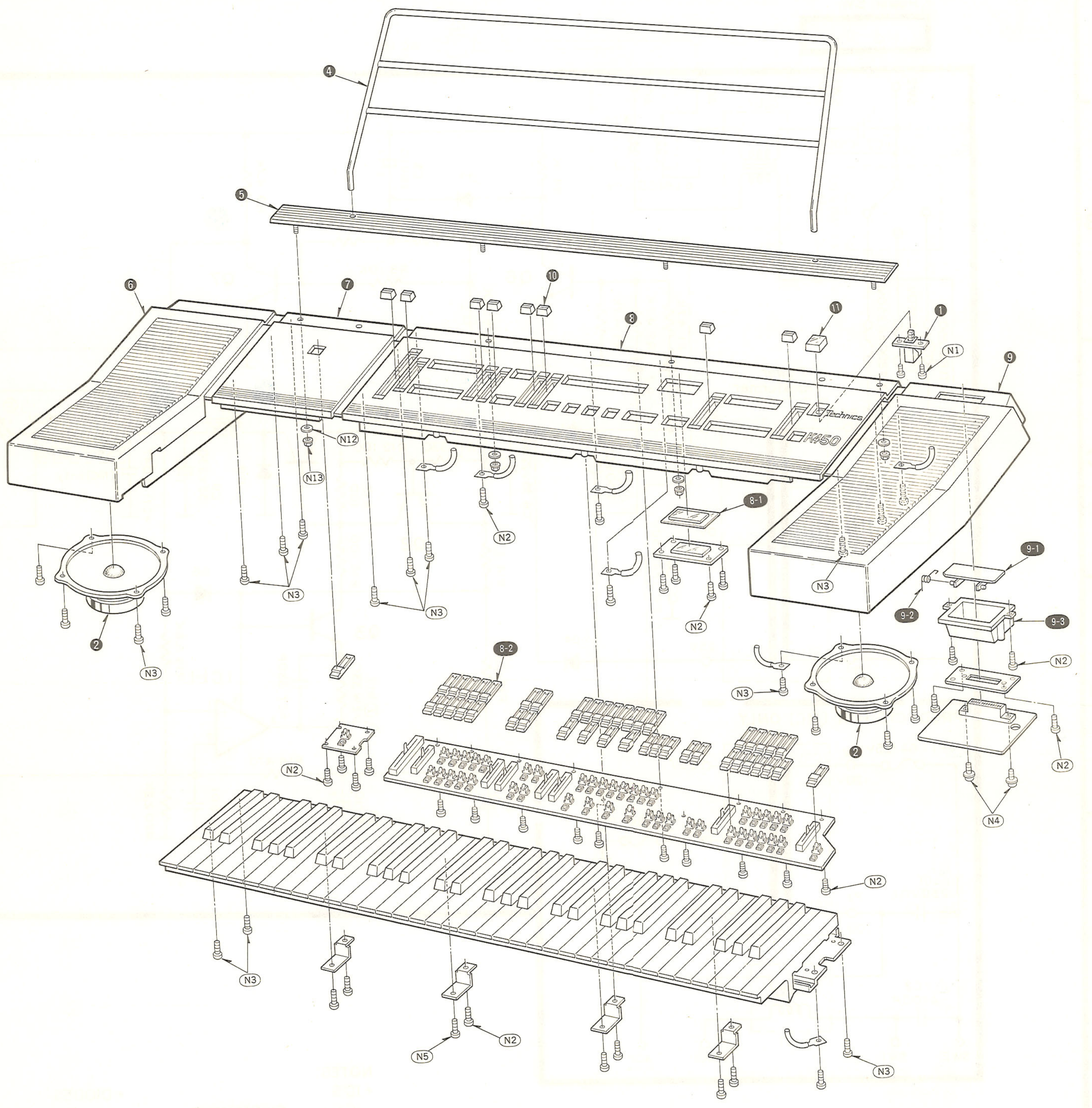
L1:	SLTGLF3
L2:	SLCG2A121T
L2 EZ :	SLCG2A121TZ
L3:	SLCG1A121T
L4 EZ :	SLQG10W2D1

EXPLODED VIEWS OF CABINET


N6
⑫
⑬
⑭
⑮
N7
③
⑰
⑯
⑱
N8
N9
N10
N11

■ KEYBOARD


❶
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
⓬
MKB 3
MKB 1
N1
N2


❶
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
8-1
8-2
9-1
9-2
9-3
N1
N2
N3
N4
N5
N12
N13
Technics

REPLACEMENT PARTS LIST

Notes:

1. Printed circuit boards are supplied only during the period of production. Rhythm module P.C.B. (SXPG11691) is supplied the same as for ordinary electrical parts.
2. Important safety notice. Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ CABINET AND CHASSIS PARTS

Ref. No.	Part No.	Description	Per/Set
SWITCH			
1 ⚠	ESB8213V	Power Switch	1
SPEAKER			
2	EAS12P291S	12cm, 6Ω	2
TRANSFORMERS			
3 ⚠	SLTG5M17	Power Transformer	1
3 MC ⚠	SLTG5M18	Power Transformer, [MC] only	1
CABINET PARTS			
○ 4	SKGG1J70A	Music Rack	1
○ 5	SGXG1830A	Ornament, Music Rack	1
6	SYWG2180A	Speaker Grille, Left Side	1
○ 7	SYWG1580A	Control Panel, Left Side	1
○ 8	SYWG1530D	Control Panel, Right Side	1
○ 8 MC	SYWG1530F	Control Panel, Right Side	1
8-1	SKEG1190A	Lens, for Musical Display	1
8-2	SBCG210A	Push Button	44
9	SYWG3170A	Speaker Grille, Right Side	1
9-1	SKEG1170A	Dust Cover } Receptacle for Memory Pack	1
9-2	SUSG390A	Spring	1
9-3	SKEG1180A	Receptacle	1
10	SBNG7031A	Knob, Slide Volume	8
11	SBCG220A	Button, Power Switch	1
12	SHRG9340A	P.C.B. Holder	5
13	SHRG9530A	P.C.B. Holder	6
14	SHRG9490A	P.C.B. Holder	15
15	SHGG8011A	P.C.B. Holder Rubber	3
○ 16	SGXG1810A	Ornament, Keyboard	1
○ 17	SKUG90A	Bottom Board	1
○ 17 MC	SKUG91A	Bottom Board, [MC] only	1
18	QKA1085	Foot	4
SCREWS and WASHERS			
N1	SNEG740A	Screw	2
N2	XTV3+10G	Screw	29
N3	XTW3+12Q	Screw	21
N4	XYN3+F14	Screw, with Washer	2
N5	XTB3+5C	Screw	4
N6	SNE499-1	Nut	5
N7	XTW3+8JFZ	Screw	4
N8	XTB3+8BFZ	Screw	4
N9	XYN5+F20FVC	Screw, with Washer	6
N10	XTW3+8QFZ	Screw	5
N11	XTW3+12QFVC	Screw	16
N12	XWG3F13	Washer	5
N13	SNE491	Nut	4
N14	XYN3+C8FZ	Screw	1

■ KEYBOARD PARTS

Ref. No.	Part No.	Description	Per/Set
1	STBG1100A	Natural Key (C and F Key)	10
2	STBG1110A	Natural Key (D Key)	5
3	STBG1120A	Natural Key (B and E Key)	10
4	STBG1130A	Natural Key (G Key)	5
5	STBG1140A	Natural Key (A Key)	5
6	STBG1150A	Natural Key (Top Octave C Key)	1
7	STBG2070A	Sharp Key	25
8	SUSG270A	Spring	61
9	SHSG1970A	Felt	2
10	SHGG9050A	Key Guide Rubber	61
11	SSPG7001A	Rubber Switch (7 continuous)	1
12	SSPG6001A	Rubber Switch (6 continuous)	9
N1	XTB3+5C	Screw	6
N2	XTW3+10L	Screw	16

■ ACCESSORIES

Ref. No.	Part No.	Description	Per/Set
○	SQCG160A	Dust Cover	1
⚠	SJAG41	AC Cord	1
MC ⚠	SJAG38	AC Cord, [MC] only	1
EK XS ⚠	SJAG39	AC Cord, [EK] [XS] only	1
XL XR ⚠	SJAG40	AC Cord, [XL] [XR] only	1
XT X ⚠ XX XV	SJP5213-1	Attachment Plug, [XT] [X] [XX] [XV] only	1
○	SQFG1980	Instruction Book	1
○ EN EL	SQFG1961	Instruction Book, [EN] [EL] only	1

■ PRINTED CIRCUIT BOARDS

Ref. No.	Part No.	Description	Per/Set
○	SXPG127831	Main (MAIN)	1
	SXPG128511	EP ROM (EROM)	1
	SXPG11691	Rhythm Module (RHY)	1
	SXPG129411	Cymbal (CYM)	1
	SXPG127911	Effector (EFF)	1
	SXPG128011	Solo Presets (SPS)	1
○	SXPG128131	Control Panel (CP)	1
○	SXPG129111	Control Panel 2 (CP 2)	1
	SXEG50A	Musical Display (MD)	1
	SXPG128211	Jack (JACK)	1
	SXPG128311	Memory Pack Control (MPC)	1
	SXPG127611	Manual Keyboard 1 (MKB 1)	1
○	SXPG129011	Manual Keyboard 3 (MKB 3)	1
	SXPG128411	Power Supply (PS)	1
MC	SXPG128421	Power Supply (PS), [MC] only	1
EZ	SXPG128451	Power Supply (PS), [EZ] only	1

■ Numbering System of Resistor

Resistor Type	Wattage	Tolerance
ERD : Carbon ERD—F : Carbon, Flame-proof	S2 : 1/4W 2 : 1/4W 25 : 1/4W 50 : 1/2W	F : ±1% G : ±2% J : ±5%
ERX : Metal Film	1 : 1W 2 : 2W	

Example:

Carbon:	ERD	S2	T	J	101	
	Type	Wattage	Shape	Tolerance	Value	
Carbon Flame-proof:	ERD	2	F	C	G	101
	Type	Wattage	Flame Proof	Fuse Type	Tolerance	Value
Metal Film:	ERX	1	AN	J	121	
	Type	Wattage	Shape	Tolerance	Value	

■ Numbering System of Capacitor

Capacitor Type	Symbol Mark	Voltage		Tolerance
		ECEA Type	Others	
ECEA : Electrolytic		0J : 6.3V	1H : 50V	ECEA Type : ±20%
ECEA—N : Non-Polar Electrolytic	Ⓝ	1C : 16V	1E : 25V	J : ±5%
ECEA—M : Electrolytic, MSR Series	(MS)	1E : 25V		K : ±10%
ECEA—Z : Electrolytic, Z Series	ⓩ	1V : 35V		M : ±20%
ECEA—K : Electrolytic, miniature type	Ⓚ	1H : 50V		Z : $^{+80}_{-20}$%
ECQV : TF Capacitor	(TF)	50M : 50V		
ECQM : Polyester		50Z : 50V		
ECC : Ceramic	○			
ECK : Ceramic	○			
ECQS : Polystyrene	Ⓢ			
ECS : Tantalume Solid Electrolytic	Ⓣ			

Example:

Electrolytic:	ECEA	0J	U	330	
	Type	Voltage	Peculiarity use	Value	
MSR, Z Series:	ECEA	50	M(Z)	R47	R
	Type	Voltage	Peculiarity use	Value	Special use
TF, Polyester:	ECQV(M)	1H	102	J	
	Type	Voltage	Value	Tolerance	
Ceramic:	ECC(K)	R	1H	220	J
	Type	Shape	Voltage	Value	Tolerance
Tantalume Solid:	ECS	F	35	E	1
	Type	Shape	Voltage	Peculiarity use	Value

■ MAIN CIRCUIT (MAIN)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIG7811G077	1 Chip 8-Bit Microcomputer	1
IC2	MN4069UB	Hex Inverter	1
IC3, 40	SVIGM74LS174	Hex D-Type Flip-Flops	2
IC4, 11	SVIGM74LS138	Decoder	2
IC5	SVIGM74LS145	Decoder, with 15V Outputs	1
IC6	SVIGTC40H373	Octal D-Type Latch	1
IC7	(SXPG128511)	EP ROM P.C.B.	1
IC8, 9	SVIGM512820R	External RAM, 16,384-Bit CMOS	2
IC10	SVIGUPD8253	Mono Counter	1
IC12	DN74LS10	Triple 3-Input Positive NAND Gates	1
IC13	SVIGTLP552	Photo Coupler	1
IC14	SVIGM74LS05	Hex Inverter with Open Collector Output	1
IC15	SVIGMSM5232R	8 Voice Tone Generator	1
IC16~18, 20, 21, 23, 25, 27, 29	SVIGM5218L	Operational Amplifier	9
IC19, 22, 24, 26, 28	SVIGM5241L	VCF (Voltage Controlled Filter)	5
IC31~35, 45	SVIGUPD4066B	Quadruple Bilateral Switch	6
IC36~39	SVIGHD14174B	Hex D-Type Flip-Flops	4
IC41	SVIGM53207	Level Shifter	1
IC42, 43	SVIGHD14050B	Hex Buffers	2
IC44	AN7147	Power Amplifier	1
TRANSISTORS			
Q1	2SC1384RS		1
Q2, 3, 7, 10, 15~17, 19~23, 26~28, 31, 32, 37	2SC2320LFG		18
Q4, 5, 8, 11, 12	2SC1047C		5
Q6	2SA933STRS		1
Q13, 14, 24, 25, 33~36	2SK381D	FET	8
Q18, 29, 30	2SJ40CD	FET	3

Ref. No.	Part No.	Description	Per/Set
DIODES			
D1~9, 13~29, 35~43	MA165TA5VT		35
D10~12	MA4036H	Zener	3
D30	MA4039H	Zener	1
COMPONENT COMBINATIONS			
Z1, 3, 4	EXBP88223MM	22KΩ×8	3
Z2, 12, 13	EXBP86223MM	22KΩ×6	3
Z5, 6	EXBP86472MM	4.7KΩ×6	2
Z7, 9	EXBP88472MM	4.7KΩ×8	2
Z10	EXBP88222JM	2.2KΩ×8	1
Z11	EXBP88335MM	3.3MΩ×8	1
QUARTZ OSCILLATOR			
X1	SVQG43U1200A	12MHz, Quartz Oscillator	1
RELAY			
RL1	SSYGMR5212S		1
COILS			
L1	EIK1EG010B	31μH	1
L2, 3	SLQG16W33A	16μH	2
VARIABLE RESISTOR			
VR1	EVG05415B24G	20KΩB, Tuning Volume	1
SWITCH			
SW1	SSSG2002A	Line Out Level Control	1
JACKS			
J1, 2	SJSG1370A	MIDI OUT, MIDI IN	2
J3	SJJG400A	Sustain Jack	1
J4	SJJG390A	Expression Jack	1
J5	SJFG120A	Line Out Jack	1

Ref. No.	Part No.	Description	Per/Set
RESISTORS			
F R1 ⚠	ERD2FCG6R8	6.8Ω, 1/4W, Fuse Type	1
R2	ERDS2TJ102	1KΩ	1
R3, 4	ERDS2TJ103	10KΩ	2
R5	ERDS2TJ331	330Ω	1
R6, 7	ERDS2TJ221	220Ω	2
R8	ERDS2TJ472	4.7KΩ	1
R9	ERDS2TJ101	100Ω	1
R10	ERDS2TJ121	120Ω	1
R12	ERDS2TJ101	100Ω	1
R14～16	ERDS2TJ472	4.7KΩ	3
R17	ERDS2TJ222	2.2KΩ	1
R18	ERDS2TJ471	470Ω	1
R20, 21	ERDS2TJ222	2.2KΩ	2
R22	ERDS2TJ471	470Ω	1
R24, 25	ERDS2TJ222	2.2KΩ	2
R26	ERDS2TJ472	4.7KΩ	1
R27	ERDS2TJ222	2.2KΩ	1
R28	ERDS2TJ472	4.7KΩ	1
R29	ERDS2TJ473	47KΩ	1
R30	ERDS2TJ223	22KΩ	1
R31	ERDS2TJ823	82KΩ	1
R32	ERDS2TJ223	22KΩ	1
R33	ERDS2TJ103	10KΩ	1
R34	ERDS2TJ222	2.2KΩ	1
R35	ERDS2TJ471	470Ω	1
R37	ERDS2TJ102	1KΩ	1
R38, 39	ERDS2TJ472	4.7KΩ	2
R40	ERDS2TJ223	22KΩ	1
F R41 ⚠	ERD2FCG101	100Ω, 1/4W, Fuse Type	1
F R42 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
R43	ERDS2TJ332	3.3KΩ	1
R44, 46	ERDS2TJ472	4.7KΩ	2
R47	ERDS2TJ681	680Ω	1
R48	ERDS2TJ472	4.7KΩ	1
F R49 ⚠	ERD2FCJ4R7	4.7Ω, 1/4W, Fuse Type	1
R50	ERDS2TJ683	68KΩ	1
R51	ERDS2TJ103	10KΩ	1
R52	ERDS2TJ102	1KΩ	1
F R53 ⚠	ERD2FCG470	47Ω, 1/4W, Fuse Type	1
R54～57	ERDS2TJ223	22KΩ	4
R58	ERDS2TJ682	6.8KΩ	1
R59	ERDS2TJ331	330Ω	1
R60～67	ERDS2TJ474	470KΩ	8
R68	ERDS2TJ333	33KΩ	1
R69	ERDS2TJ154	150KΩ	1
R70	ERDS2TJ683	68KΩ	1
R71	ERDS2TJ224	220KΩ	1
R72	ERDS2TJ563	56KΩ	1
R73	ERDS2TJ103	10KΩ	1
F R74 ⚠	ERD2FCG470	47Ω, 1/4W, Fuse Type	1
R75～82	ERDS2TJ563	56KΩ	8
R83～86	ERDS2TJ474	470KΩ	4
R87～90	ERDS2TJ823	82KΩ	4
R91～94	ERDS2TJ393	39KΩ	4
R95	ERDS2TJ683	68KΩ	1
R96～100	ERDS2TJ273	27KΩ	5
R101～103	ERDS2TJ683	68KΩ	3
R104	ERDS2TJ472	4.7KΩ	1
R105	ERDS2TJ124	120KΩ	1
R106	ERDS2TJ154	150KΩ	1
R107	ERDS2TJ224	220KΩ	1
R108	ERDS2TJ334	330KΩ	1
R109	ERDS2TJ222	2.2KΩ	1
R110	ERDS2TJ223	22KΩ	1
R111	ERDS2TJ104	100KΩ	1
R112, 113	ERDS2TJ224	220KΩ	2
R114	ERDS2TJ104	100KΩ	1
R115	ERDS2TJ683	68KΩ	1
R116	ERDS2TJ223	22KΩ	1
R117	ERDS2TJ473	47KΩ	1
R118	ERDS2TJ104	100KΩ	1
R119	ERDS2TJ682	6.8KΩ	1
R120	ERDS2TJ472	4.7KΩ	1
R121	ERDS2TJ103	10KΩ	1
R122	ERDS2TJ223	22KΩ	1
R123	ERDS2TJ473	47KΩ	1
R124	ERDS2TJ104	100KΩ	1
R125, 126	ERDS2TJ333	33KΩ	2
R127	ERDS2TJ472	4.7KΩ	1
R128	ERDS2TJ104	100KΩ	1
R129	ERDS2TJ393	39KΩ	1
R130	ERDS2TJ472	4.7KΩ	1
R131	ERDS2TJ103	10KΩ	1
R132	ERDS2TJ223	22KΩ	1
R133	ERDS2TJ102	1KΩ	1
R134	ERDS2TJ334	330KΩ	1
R135	ERDS2TJ472	4.7KΩ	1
R136	ERDS2TJ104	100KΩ	1
R137	ERDS2TJ682	6.8KΩ	1
R138	ERDS2TJ393	39KΩ	1
R139	ERDS2TJ104	100KΩ	1
R140	ERDS2TJ153	15KΩ	1
R141, 143	ERDS2TJ104	100KΩ	2
R144, 145	ERDS2TJ562	5.6KΩ	2
R146	ERDS2TJ682	6.8KΩ	1
R147	ERDS2TJ183	18KΩ	1
R148	ERDS2TJ473	47KΩ	1
R149	ERDS2TJ103	10KΩ	1
R150	ERDS2TJ472	4.7KΩ	1
R151	ERDS2TJ104	100KΩ	1
R152	ERDS2TJ682	6.8KΩ	1
R153	ERDS2TJ273	27KΩ	1
R154, 155	ERDS2TJ471	470Ω	2
R156	ERDS2TJ473	47KΩ	1
R157	ERDS2TJ103	10KΩ	1
R158	ERDS2TJ681	680Ω	1
R159	ERDS2TJ472	4.7KΩ	1
R160	ERDS2TJ103	10KΩ	1
R161	ERDS2TJ472	4.7KΩ	1
R162	ERDS2TJ333	33KΩ	1
R163	ERDS2TJ153	15KΩ	1
R164	ERDS2TJ273	27KΩ	1
R165	ERDS2TJ683	68KΩ	1
R166	ERDS2TJ224	220KΩ	1
R167	ERDS2TJ563	56KΩ	1
R168	ERDS2TJ224	220KΩ	1
R169	ERDS2TJ473	47KΩ	1
R170	ERDS2TJ104	100KΩ	1
R171	ERDS2TJ683	68KΩ	1
R172	ERDS2TJ393	39KΩ	1
R173	ERDS2TJ681	680Ω	1
R175, 176	ERDS2TJ104	100KΩ	2
R177	ERDS2TJ683	68KΩ	1

Ref. No.	Part No.	Description	Per/Set
R178	ERDS2TJ124	120 KΩ	1
R179	ERDS2TJ823	82 KΩ	1
R180	ERDS2TJ474	470 KΩ	1
R181	ERDS2TJ224	220 KΩ	1
R182	ERDS2TJ104	100 KΩ	1
R183	ERDS2TJ473	47 KΩ	1
R184	ERDS2TJ474	470 KΩ	1
R185～187	ERDS2TJ823	82 KΩ	3
R188～190	ERDS2TJ683	68 KΩ	3
R191～193	ERDS2TJ563	56 KΩ	3
R194～196	ERDS2TJ473	47 KΩ	3
R197	ERDS2TJ105	1 MΩ	1
R198	ERDS2TJ104	100 KΩ	1
R199	ERDS2TJ683	68 KΩ	1
R202	ERDS2TJ682	6.8 KΩ	1
R203	ERDS2TJ472	4.7 KΩ	1
R204	ERDS2TJ103	10 KΩ	1
R205	ERDS2TJ472	4.7 KΩ	1
R206	ERDS2TJ103	10 KΩ	1
R207, 208	ERDS2TJ681	680Ω	2
R209	ERDS2TJ472	4.7 KΩ	1
R210	ERDS2TJ333	33 KΩ	1
R211	ERDS2TJ224	220 KΩ	1
R212	ERDS2TJ563	56 KΩ	1
R213	ERDS2TJ472	4.7 KΩ	1
R214	ERDS2TJ104	100 KΩ	1
R215	ERDS2TJ333	33 KΩ	1
R216	ERDS2TJ683	68 KΩ	1
R217	ERDS2TJ103	10 KΩ	1
R218	ERDS2TJ681	680Ω	1
R219	ERDS2TJ123	12 KΩ	1
R220	ERDS2TJ334	330 KΩ	1
R221	ERDS2TJ473	47 KΩ	1
R222	ERDS2TJ333	33 KΩ	1
R223	ERDS2TJ183	18 KΩ	1
R224	ERDS2TJ682	6.8 KΩ	1
R225	ERDS2TJ224	220 KΩ	1
R226	ERDS2TJ473	47 KΩ	1
R227	ERDS2TJ183	18 KΩ	1
R228	ERDS2TJ103	10 KΩ	1
R229	ERDS2TJ473	47 KΩ	1
R230	ERDS2TJ103	10 KΩ	1
R231	ERDS2TJ473	47 KΩ	1
R232	ERDS2TJ105	1 MΩ	1
R233	ERDS2TJ102	1 KΩ	1
R234, 235	ERDS2TJ105	1 MΩ	2
R236	ERDS2TJ472	4.7 KΩ	1
R237	ERDS2TJ224	220 KΩ	1
R238	ERDS2TJ101	100Ω	1
R239	ERDS2TJ682	6.8 KΩ	1
R240	ERDS2TJ104	100 KΩ	1
R241	ERDS2TJ224	220 KΩ	1
R242	ERDS2TJ104	100 KΩ	1
R243	ERDS2TJ103	10 KΩ	1
Ⓕ R244 ⚠	ERD25FVJ470	47Ω, 1/4W	1
R245	ERDS2TJ105	1 MΩ	1
R246	ERDS2TJ474	470 KΩ	1
R247	ERDS2TJ334	330 KΩ	1
R248	ERDS2TJ474	470 KΩ	1
R249	ERDS2TJ223	22 KΩ	1
R250	ERDS2TJ333	33 KΩ	1
R251, 252	ERDS2TJ104	100 KΩ	2

Ref. No.	Part No.	Description	Per/Set
R265	ERDS2TJ123	12 KΩ	1
R266	ERDS2TJ681	680Ω	1
R267	ERDS2TJ472	4.7 KΩ	1
R268	ERDS2TJ682	6.8 KΩ	1
R269, 270	ERDS2TJ334	330 KΩ	1
R271	ERDS2TJ123	12 KΩ	1
R272	ERDS2TJ334	330 KΩ	1
R273	ERDS2TJ473	47 KΩ	1
R274	ERDS2TJ333	33 KΩ	1
R275	ERDS2TJ104	100 KΩ	1
R276	ERDS2TJ224	220 KΩ	1
R277	ERDS2TJ154	150 KΩ	1
R278	ERDS2TJ124	120 KΩ	1
R279	ERDS2TJ224	220 KΩ	1
R280	ERDS2TJ823	82 KΩ	1
R281	ERDS2TJ123	12 KΩ	1
R282	ERDS2TJ104	100 KΩ	1
R283	ERDS2TJ224	220 KΩ	1
R284	ERDS2TJ154	150 KΩ	1
R285	ERDS2TJ124	120 KΩ	1
R286	ERDS2TJ224	220 KΩ	1
R287	ERDS2TJ823	82 KΩ	1
R288	ERDS2TJ123	12 KΩ	1
R289	ERDS2TJ681	680Ω	1
R290	ERDS2TJ473	47 KΩ	1
R291	ERDS2TJ822	8.2 KΩ	1
R292	ERDS2TJ274	270 KΩ	1
R293	ERDS2TJ225	2.2 MΩ	1
R294, 295	ERDS2TJ334	330 KΩ	2
R296	ERDS2TJ682	6.8 KΩ	1
R297	ERDS2TJ472	4.7 KΩ	1
R298, 299	ERDS2TJ473	47 KΩ	2
R300, 301	ERDS2TJ472	4.7 KΩ	2
R302, 303	ERDS2TJ103	10 KΩ	2
R304, 305	ERDS2TJ471	470Ω	2
Ⓕ R306 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W	1
R307	ERDS2TJ471	470Ω	1
Ⓕ R308 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W	1
R309	ERDS2TJ471	470Ω	1
R310	ERDS2TJ334	330 KΩ	1
R311	ERDS2TJ102	1 KΩ	1
R312	ERDS2TJ154	150 KΩ	1
R313	ERDS2TJ563	56 KΩ	1
R314	ERDS2TJ103	10 KΩ	1
🄵 R315 ⚠	ERD2FCG680	68Ω, 1/4W, Fuse Type	1
R316	ERDS2TJ103	10 KΩ	1
R317	ERDS2TJ154	150 KΩ	1
R318	ERDS2TJ471	470Ω	1
R319	ERDS2TJ224	220 KΩ	1
R320	ERDS2TJ102	1 KΩ	1
R321	ERDS2TJ822	8.2 KΩ	1
R322	ERDS2TJ222	2.2 KΩ	1
R323	ERDS2TJ102	1 KΩ	1
R324	ERDS2TJ101	100Ω	1
R325	ERDS2TJ222	2.2 KΩ	1
R326	ERDS2TJ102	1 KΩ	1
R327	ERDS2TJ101	100Ω	1
R328	ERDS2TJ223	22 KΩ	1
Ⓕ R329 ⚠	ERX1ANJPR22	0.22Ω, 1W	1
R330	ERDS2TJ472	4.7 KΩ	1
R331	ERDS2TJ104	100 KΩ	1
R332～335	ERDS2TJ154	150 KΩ	4

Ref. No.	Part No.	Description	Per/Set
R336	ERDS2TJ683	68KΩ	1
R337	ERDS2TJ154	150KΩ	1
R338	ERDS2TJ683	68KΩ	1
R339	ERDS2TJ102	1KΩ	1
R340	ERDS2TJ223	22KΩ	1
R341	ERDS2TJ104	100KΩ	1
R342	ERDS2TJ822	8.2KΩ	1
R343	ERDS2TJ183	18KΩ	1
R344	ERDS2TJ104	100KΩ	1
R345	ERDS2TJ223	22KΩ	1
R346	ERDS2TJ473	47KΩ	1
R347	ERDS2TJ223	22KΩ	1
R348	ERDS2TJ473	47KΩ	1
R349	ERDS2TJ223	22KΩ	1
R350	ERDS2TJ103	10KΩ	1
R351	ERDS2TJ222	2.2KΩ	1
R353, 354	ERDS2TJ104	100KΩ	2
CAPACITORS			
C1	ECEA1CU331	330μF, 16V	1
○ C2	ECKR1E473ZV	0.047μF	1
C3	ECEA1CU470	47μF, 16V	1
○ C5, 6	ECKR1E473ZV	0.047μF	2
C7	ECEA1HU010	1μF, 50V	1
○ C8, 9	ECKR1E473ZV	0.047μF	2
○ C10, 11	ECCR1H220J	22PF	2
(MS)C12	ECEA50M1R	1μF, 50V	1
C13	EECW5R5F104	0.1F, 5.5V, Liquid Electrolyte Double Layer	1
C14	ECEA1EU470	47μF, 25V	1
○ C15	ECKR1E473ZV	0.047μF	1
C16	ECEA1HU010	1μF, 50V	1
○ C17	ECKR1E473ZV	0.047μF	1
Ⓢ C18, 19	ECQS1561JZ	560PF	2
Ⓢ C20	ECQS1221JZ	220PF	1
○ C21	ECCR1H471J	470PF	1
C22	ECEA1EU470	47μF, 25V	1
○ C23	ECKR1E473ZV	0.047μF	1
C24	ECEA1CU102	1000μF, 16V	1
(MS)C25～32	ECEA50MR68	0.68μF, 50V	8
○ C33	ECKR1E473ZV	0.047μF	1
C35	ECEA0JU102	1000μF, 6.3V	1
C36	ECQM1H472KV	0.0047μF	1
C37	ECQM1H103KV	0.01μF	1
C38	ECQM1H223KV	0.022μF	1
C39	ECQM1H473KV	0.047μF	1
C40	ECQM1H682KV	0.0068μF	1
C41	ECQM1H153KV	0.015μF	1
C42	ECQM1H473KV	0.047μF	1
(TF)C43	ECQV1H104JZ	0.1μF	1
C44	ECQM1H332KV	0.0033μF	1
C45～47	ECQM1H102KV	0.001μF	3
C48	ECQM1H153KV	0.015μF	1
C49～51	ECQM1H472KV	0.0047μF	3
C52	ECQM1H333KV	0.033μF	1
C53～55	ECQM1H153KV	0.015μF	3
C56, 57	ECQM1H682KV	0.0068μF	2
C58	ECQM1H332KV	0.0033μF	1
○ C59	ECCR1H101J	100PF	1
C60	ECEA1HU010	1μF, 50V	1
C61	ECQM1H682KV	0.0068μF	1

Ref. No.	Part No.	Description	Per/Set
○ C62	ECKR1E473ZV	0.047μF	1
C63	ECQM1H473KV	0.047μF	1
C65	ECQM1H153KV	0.015μF	1
○ C66	ECCR1H681J	680PF	1
C67	ECQM1H472KV	0.0047μF	1
○ C68	ECCR1H101J	100PF	1
(TF)C69	ECQV1H104JZ	0.1μF	1
C70, 71	ECQM1H153KV	0.015μF	2
○ C72	ECCR1H101J	100PF	1
C73	ECQM1H333KV	0.033μF	1
C74	ECQM1H152KV	0.0015μF	1
(MS)C75	ECEA50M1R	1μF, 50V	1
C76	ECQM1H333KV	0.033μF	1
C77	ECQM1H473KV	0.047μF	1
C78	ECQM1H222KV	0.0022μF	1
C79	ECQM1H683KV	0.068μF	1
(TF)C80	ECQV1H104JZ	0.1μF	1
C81	ECQM1H332KV	0.0033μF	1
(MS)C82	ECEA50M1R	1μF, 50V	1
C83	ECQM1H223KV	0.022μF	1
C84	ECEA1CU331	330μF, 16V	1
○ C85	ECKR1E473ZV	0.047μF	1
C86, 87	ECQM1H102KV	0.001μF	2
C88	ECEA1HUR47	0.47μF, 50V	1
C89, 90	ECQM1H102KV	0.001μF	2
C91, 92	ECQM1H222KV	0.0022μF	2
C93, 94	ECQM1H472KV	0.0047μF	2
C95, 96	ECQM1H103KV	0.01μF	2
○ C97	ECCR1H101J	100PF	1
(MS)C98, 99	ECEA50M1R	1μF, 50V	2
C101, 102	ECCR1H471J	470PF	2
C103	ECEA1HUR47	0.47μF, 50V	1
○ C104	ECCR1H221J	220PF	1
C105	ECEA1HU010	1μF, 50V	1
○ C106	ECCR1H101J	100PF	1
Ⓝ C107	ECEA1HN010S	1μF, 50V	1
C108	ECEA1HU010	1μF, 50V	1
○ C109, 110	ECKR1E473ZV	0.047μF	2
C111	ECEA1HU010	1μF, 50V	1
C112	ECQM1H473KV	0.047μF	1
(TF)C113	ECQV1H104JZ	0.1μF	1
C114	ECQM1H223KV	0.022μF	1
C115	ECQM1H103KV	0.01μF	1
C116	ECQM1H222KV	0.0022μF	1
C117	ECQM1H473KV	0.047μF	1
C118, 119	ECEA1HU010	1μF, 50V	2
C120, 121	ECQM1H223KV	0.022μF	2
C122	ECQM1H102KV	0.001μF	1
○ C124	ECCR1H470J	47PF	1
C128～131	ECEA1HU010	1μF, 50V	4
C132, 133	ECEA1CU100	10μF, 16V	2
○ C134, 135	ECCR1H101J	100PF	2
C136, 137	ECEA1HU010	1μF, 50V	2
C138, 139	ECEA0JU101	100μF, 6.3V	2
C140	ECEA1EU470	47μF, 25V	1
C141	ECEA1HU010	1μF, 50V	1
C142, 143	ECEA1CU470	47μF, 16V	2
(TF)C144	ECQV1H104JZ	0.1μF	1
C145	ECEA1CU102	1000μF, 16V	1
(TF)C146	ECQV1H104JZ	0.1μF	1
C147	ECEA1CU102	1000μF, 16V	1
C148	ECEA1CU100	10μF, 16V	1

Ref. No.	Part No.	Description	Per/Set
C149, 150	ECEA1HUR47	0.47μF, 50V	2
C151	ECEA1EU221	220μF, 25V	1
C152	ECEA1HU010	1μF, 50V	1
Ⓝ C153	ECEA1HN010S	1μF, 50V	1
○ C154, 155	ECCR1H101J	100PF	2
Ⓝ C156, 157	ECEA1HN010S	1μF, 50V	2
C158	ECEA1EU102	1000μF, 25V	1
C159	ECEA1HU010	1μF, 50V	1
C160	ECQM1H152KV	0.0015μF	1
C161	ECQM1H222KV	0.0022μF	1
○ C162, 163	ECKR1E473ZV	0.047μF	2
C165	ECQM1H102KV	0.001μF	1
○ C166～176	ECKR1E473ZV	0.047μF	11
○ C178～180	ECKR1E473ZV	0.047μF	3
○ C181	ECCR1H221J	220PF	1
(TF) C182～185	ECQV1H104JZ	0.1μF	4
C186	ECQM1H102KV	0.001μF	1

■ EP ROM (EROM)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIG27128PGH	ROM	1
IC2	SVIG27128PGL	ROM	1
TRANSISTOR			
Q1	2SC1047C		1
RESISTORS			
R1	ERDS2TJ682	6.8KΩ	1
R2	ERDS2TJ332	3.3KΩ	1
R3	ERDS2TJ681	680Ω	1

■ CYMBAL CIRCUIT (CYM)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGHD14584B	Hex Inverter	1
IC2	AN6551F	Operation Amplifier	1
TRANSISTORS			
Q1～4	2SC2320LFG		4
DIODES			
D1～6	MA165TA5VT		6
RESISTORS			
R1	ERDS2TJ684	680KΩ	1
R2	ERDS2TJ564	560KΩ	1
R3	ERDS2TJ684	680KΩ	1
R4	ERDS2TJ474	470KΩ	1
R5	ERDS2TJ394	390KΩ	1
R6	ERDS2TJ184	180KΩ	1
R7～12	ERDS2TJ104	100KΩ	6
R13	ERDS2TJ332	3.3KΩ	1

Ref. No.	Part No.	Description	Per/Set
R14	ERDS2TJ333	33KΩ	1
R15	ERDS2TJ102	1KΩ	1
R16	ERDS2TJ393	39KΩ	1
R17	ERDS2TJ224	220KΩ	1
R18	ERDS2TJ105	1MΩ	1
R19, 20	ERDS2TJ151	150Ω	2
R21	ERDS2TJ103	10KΩ	1
R22	ERDS2TJ472	4.7KΩ	1
R23	ERDS2TJ332	3.3KΩ	1
R24	ERDS2TJ333	33KΩ	1
R25	ERDS2TJ472	4.7KΩ	1
R26	ERDS2TJ682	6.8KΩ	1
R27	ERDS2TJ103	10KΩ	1
R28	ERDS2TJ334	330KΩ	1
R29	ERDS2TJ472	4.7KΩ	1
R30	ERDS2TJ682	6.8KΩ	1
R31～33	ERDS2TJ333	33KΩ	3
R34	ERDS2TJ103	10KΩ	1
R35	ERDS2TJ104	100KΩ	1
R36	ERDS2TJ683	68KΩ	1
CAPACITORS			
○ C1, 2	ECKR1E473ZV	0.047μF	2
C4, 5	ECQM1H103JV	0.01μF	2
C6～9	ECQM1H223JV	0.022μF	4
(MS) C10, 11	ECEA50MR68	0.68μF, 50V	2
○ C12	ECCR1H681J	680PF	1
○ C13	ECCR1H330J	33PF	1
C14, 15	ECQM1H222KV	0.0022μF	2
C16, 17	ECQM1H223KV	0.022μF	2
○ C18, 19	ECCR1H151J	150PF	2
○ C20～22	ECCR1H471J	470PF	3
○ C23	ECCR1H221J	220PF	1

■ EFFECTOR CIRCUIT (EFF)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1～3, 7, 14	SVIGM5218L	Operational Amplifier	5
IC4～6	SVIGUPD4066B	Quadruple Bilateral Switch	3
IC8～10	SVIGMSM4011	Quadruple 2-Input NAND Gates	3
IC11～13	MN3006	BBD for Audio Signal Delays (128-stage)	3
TRANSISTORS			
Q1～10	2SC2320LFG		10
DIODES			
D1～8	MA165TA5VT		8
VARIABLE RESISTOR			
VR1	EVN61AA00B54	50KΩB	1
RESISTORS			
R1～3	ERDS2TJ103	10KΩ	3
R4～6	ERDS2TJ104	100KΩ	3
R7	ERDS2TJ684	680KΩ	1

Ref. No.	Part No.	Description	Per/Set
R8	ERDS2TJ474	470KΩ	1
R9	ERDS2TJ153	15KΩ	1
R10	ERDS2TJ331	330Ω	1
R11	ERDS2TJ474	470KΩ	1
R12	ERDS2TJ153	15KΩ	1
R13	ERDS2TJ331	330Ω	1
R14	ERDS2TJ474	470KΩ	1
R15	ERDS2TJ153	15KΩ	1
R16	ERDS2TJ331	330Ω	1
R17	ERDS2TJ274	270KΩ	1
R18	ERDS2TJ103	10KΩ	1
R19	ERDS2TJ274	270KΩ	1
R20	ERDS2TJ103	10KΩ	1
R21	ERDS2TJ274	270KΩ	1
R22	ERDS2TJ103	10KΩ	1
R23～26	ERDS2TJ104	100KΩ	4
R27	ERDS2TJ153	15KΩ	1
R28	ERDS2TJ331	330Ω	1
R29	ERDS2TJ153	15KΩ	1
R30	ERDS2TJ331	330Ω	1
R31	ERDS2TJ153	15KΩ	1
R32	ERDS2TJ331	330Ω	1
R33	ERDS2TJ473	47KΩ	1
R34	ERDS2TJ102	1KΩ	1
R35	ERDS2TJ224	220KΩ	1
R36	ERDS2TJ683	68KΩ	1
R37	ERDS2TJ563	56KΩ	1
R38	ERDS2TJ124	120KΩ	1
R39, 40	ERDS2TJ154	150KΩ	2
R41	ERDS2TJ224	220KΩ	1
R42	ERDS2TJ474	470KΩ	1
R43	ERDS2TJ224	220KΩ	1
R44	ERDS2TJ154	150KΩ	1
R45	ERDS2TJ472	4.7KΩ	1
R46, 47	ERDS2TJ683	68KΩ	2
R48	ERDS2TJ154	150KΩ	1
R49, 50	ERDS2TJ124	120KΩ	2
R51	ERDS2TJ474	470KΩ	1
R52	ERDS2TJ224	220KΩ	1
R53	ERDS2TJ154	150KΩ	1
R54	ERDS2TJ392	3.9KΩ	1
R56	ERDS2TJ393	39KΩ	1
R57	ERDS2TJ123	12KΩ	1
R58	ERDS2TJ472	4.7KΩ	1
R59	ERDS2TJ223	22KΩ	1
R60	ERDS2TJ184	180KΩ	1
R61, 62	ERDS2TJ332	3.3KΩ	2
R63	ERDS2TJ184	180KΩ	1
R64	ERDS2TJ393	39KΩ	1
R65	ERDS2TJ123	12KΩ	1
R66	ERDS2TJ472	4.7KΩ	1
R67	ERDS2TJ223	22KΩ	1
R68	ERDS2TJ184	180KΩ	1
R69, 70	ERDS2TJ332	3.3KΩ	2
R71	ERDS2TJ184	180KΩ	1
R72	ERDS2TJ123	12KΩ	1
R73	ERDS2TJ472	4.7KΩ	1
R74	ERDS2TJ223	22KΩ	1
R75	ERDS2TJ184	180KΩ	1
R76, 77	ERDS2TJ332	3.3KΩ	2
R78	ERDS2TJ184	180KΩ	1
R79	ERDS2TJ104	100KΩ	1

Ref. No.	Part No.	Description	Per/Set
R80	ERDS2TJ223	22KΩ	1
R81, 82	ERDS2TJ103	10KΩ	2
R83	ERDS2TJ563	56KΩ	1
R84	ERDS2TJ472	4.7KΩ	1
R85	ERDS2TJ153	15KΩ	1
R86	ERDS2TJ333	33KΩ	1
R87	ERDS2TJ473	47KΩ	1
R88	ERDS2TJ333	33KΩ	1
R89	ERDS2TJ102	1KΩ	1
R90	ERDS2TJ683	68KΩ	1
R91	ERDS2TJ224	220KΩ	1
R92	ERDS2TJ104	100KΩ	1
R93	ERDS2TJ223	22KΩ	1
R94, 95	ERDS2TJ683	68KΩ	2
R96	ERDS2TJ104	100KΩ	1
R99	ERDS2TJ153	15KΩ	1
R100	ERDS2TJ333	33KΩ	1
🄵 R101 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R102	ERDS2TJ103	10KΩ	1
R103, 104	ERDS2TJ154	150KΩ	2
R105	ERDS2TJ153	15KΩ	1
R106	ERDS2TJ333	33KΩ	1
🄵 R107 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R108	ERDS2TJ103	10KΩ	1
R109, 110	ERDS2TJ154	150KΩ	2
R111	ERDS2TJ153	15KΩ	1
R112	ERDS2TJ333	33KΩ	1
🄵 R113 ⚠	ERD2FCG220	22Ω, 1/4W, Fuse Type	1
R114	ERDS2TJ103	10KΩ	1
R115, 116	ERDS2TJ154	150KΩ	2
R117	ERDS2TJ184	180KΩ	1
R118	ERDS2TJ334	330KΩ	1
R119	ERDS2TJ184	180KΩ	1
R120	ERDS2TJ684	680KΩ	1
R121	ERDS2TJ184	180KΩ	1
R122	ERDS2TJ334	330KΩ	1
R123	ERDS2TJ184	180KΩ	1
R124	ERDS2TJ684	680KΩ	1
R125, 126	ERDS2TJ334	330KΩ	2
R127, 128	ERDS2TJ472	4.7KΩ	2
R129	ERDS2TJ104	100KΩ	1
R130	ERDS2TJ473	47KΩ	1
CAPACITORS			
(TF) C1～3	ECQV1H154JZ	0.15μF	3
C4～6	ECEA1HU2R2	2.2μF, 50V	3
C7, 8	ECEA1CU100	10μF, 16V	2
(TF) C9	ECQV1H104JZ	0.1μF	1
C10	ECEA1CU470	47μF, 16V	1
(TF) C11	ECQV1H224JZ	0.22μF	1
C12	ECEA1CU101	100μF, 16V	1
C13	ECEA1CU100	10μF, 16V	1
C14	ECEA1HUR47	0.47μF, 50V	1
○ C15, 16	ECCR1H151J	150PF	2
C17	ECEA1CU100	10μF, 16V	1
C18	ECEA1HUR47	0.47μF, 50V	1
○ C19, 20	ECCR1H151J	150PF	2
C21	ECEA1CU100	10μF, 16V	1
C22	ECEA1HUR47	0.47μF, 50V	1
○ 23, 24	ECCR1H151J	150PF	2
C25	ECQM1H222KV	0.0022μF	1

Ref. No.	Part No.	Description	Per/Set
C27, 28	ECQM1H103KV	0.01µF	2
C29	ECQM1H223KV	0.022µF	1
C30, 31	ECQM1H222KV	0.0022µF	2
○ C32	ECCR1H680J	68 PF	1
C33	ECQM1H473KV	0.047µF	1
(TF)C34	ECQV1H104JZ	0.1µF	1
C35	ECQM1H102KV	0.001µF	1
C36	ECEA1CU100	10µF, 16V	1
C37	ECQM1H153KV	0.015µF	1
○ C38	ECCR1H681J	680 PF	1
C39	ECEA1CU101	100µF, 16V	1
○ C40	ECCR1H331J	330 PF	1
C41	ECQM1H153KV	0.015µF	1
○ C42	ECCR1H681J	680 PF	1
C43	ECEA1CU101	100µF, 16V	1
○ C44	ECCR1H331J	330 PF	1
C45	ECQM1H153KV	0.015µF	1
○ C46	ECCR1H681J	680 PF	1
C47	ECEA1CU101	100µF, 16V	1
○ C48	ECCR1H331J	330 PF	1
C49	ECQM1H153KV	0.015µF	1
(TF)C50, 51	ECQV1H104JZ	0.1µF	2
C52	ECEA1CU470	47µF, 16V	1
C53	ECEA1EU100	10µF, 25V	1
C54	ECQM1H223KV	0.022µF	1
Ⓝ C55	ECEA1HN010S	1µF, 50V	1
○ C56, 57	ECCR1H470J	47 PF	2

■ SOLO PRESETS CIRCUIT (SPS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1	SVIGM80C4981	1 Chip 8-Bit Microcomputer	1
IC2	SVIG3128PC91	128K Bit Mask Programmable ROM	1
IC3	SVIG65002019	Gate Array	1
IC4	SVIGHD14046B	Phase-Locked Loop	1
IC5, 6	SVIGM5218L	Operational Amplifier	2
IC7	SVIGUPD4066B	Quadruple Bilateral Switch	1
TRANSISTORS			
Q1, 2	2SC2320LFG		2
DIODES			
D1～4	MA165TA5VT		4
COMPONENT COMBINATIONS			
Z1	EXBP88103MM	10KΩ×8, Block Resistor	1
Z2	EXBLD8253G	25K/50KΩ	1
CERAMIC OSCILLATOR			
X1	SVQGCSA110MT	11MHz, Ceramic Oscillator	1
RESISTORS			
R1	ERDS2TJ472	4.7KΩ	1
R2	ERDS2TJ102	1KΩ	1
R3	ERDS2TJ562	5.6KΩ	1
R4	ERDS2TJ683	68KΩ	1
R5	ERDS2TJ563	56KΩ	1
R6	ERDS2TJ105	1MΩ	1
R7	ERDS2TJ153	15KΩ	1
R8	ERDS2TJ103	10KΩ	1
R9	ERDS2TJ104	100KΩ	1
R10	ERDS2TJ224	220KΩ	1
R11	ERDS2TJ153	15KΩ	1
R12, 13	ERDS2TJ333	33KΩ	2
R14	ERDS2TJ154	150KΩ	1
R15	ERDS2TJ153	15KΩ	1
R16	ERDS2TJ103	10KΩ	1
R17	ERDS2TJ101	100Ω	1
R18	ERDS2TJ472	4.7KΩ	1
R19	ERDS2TJ222	2.2KΩ	1
R20	ERDS2TJ472	4.7KΩ	1
R21	ERDS2TJ105	1MΩ	1
R22	ERDS2TJ333	33KΩ	1
R23	ERDS2TJ393	39KΩ	1
R24	ERDS2TJ103	10KΩ	1
R25	ERDS2TJ474	470KΩ	1
R26	ERDS2TJ104	100KΩ	1
R27	ERDS2TJ472	4.7KΩ	1
R28	ERDS2TJ103	10KΩ	1
R29	ERDS2TJ473	47KΩ	1
R30	ERDS2TJ103	10KΩ	1
R31, 32	ERDS2TJ104	100KΩ	2
R33	ERDS2TJ472	4.7KΩ	1
R34	ERDS2TJ333	33KΩ	1
R35	ERDS2TJ102	1KΩ	1
R36	ERDS2TJ103	10KΩ	1
R37	ERDS2TJ222	2.2KΩ	1
R38	ERDS2TJ683	68KΩ	1
R39	ERDS2TJ274	270KΩ	1
R42	ERDS2TJ103	10KΩ	1
R43	ERDS2TJ473	47KΩ	1
R44	ERDS2TJ273	27KΩ	1
CAPACITORS			
○ C1	ECKR1E473ZV	0.047µF	1
C2	ECEA1HUR47	0.47µF, 50V	1
○ C3, 4	ECCR1H220J	22 PF	2
○ C5	ECKR1E473ZV	0.047µF	1
(TF)C7	ECQV1H154JZ	0.15µF	1
Ⓝ C8	ECEA1HN010S	1µF, 50V	1
C9	ECQM1H153KV	0.015µF	1
○ C10	ECKR1E473ZV	0.047µF	1
C11	ECQM1H102KV	0.001µF	1
Ⓩ C12	ECEA50Z2R2	2.2µF, 50V	1
(TF)C13～15	ECQV1H334JZ	0.33µF	3
○ C16	ECKR1E473ZV	0.047µF	1
○ C17	ECCR1H101J	100 PF	1
Ⓝ C18	ECEA1HN010S	1µF, 50V	1
C19	ECQM1H103KV	0.01µF	1
C20	ECQM1H332KV	0.0033µF	1
○ C21	ECCR1H151J	150 PF	1
C22	ECEA1CU470	47µF, 16V	1
(TF)C23	ECQV1H104JZ	0.1µF	1
C26, 27	ECEA1EU330	33µF, 25V	2

■ CONTROL PANEL CIRCUIT (CP)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUITS			
IC1, 2	SVIGM74LS138	Decoder	2
IC3	SVIGM74LS74	Dual D-Type Flip-Flops	1
IC4~10	SVIGSNALS174	Hex D-Type Flip-Flops	7
TRANSISTORS			
Q1, 2	2SA830B		2
DIODES			
S D1~48	MA162A	Switching	48
D49, 51, 53, 54, 57~60, 63~77, 79~90	SWLG30A	LED (red), with Spacer	35
D50, 52, 55, 56, 61, 62, 78, 91	SWLG30B	LED (yellow), with Spacer	8
SWITCHES			
	SSHG1037A	Switch, for Push Type	43
	SSSG1004A	Slide Switch (Transpose)	1
VARIABLE RESISTORS			
VR1	EVC05215B24G	20 KΩ B, Tempo Control	1
VR2	EVC05315B14G	10 KΩ B, Bass Volume	1
VR3~6	EVC05015B25G	200 KΩ B, Solo Volume, Main Volume, Rhythm Volume, Accomp. Volume	4
VR7	EVC05115B15G	100 KΩ B, Sustain Volume	1
RESISTORS			
R1~43	ERDS2TJ331	330Ω	43
R44	ERDS2TJ103	10 KΩ	1
R45	ERDS2TJ333	33 KΩ	1
R46	ERDS2TJ473	47 KΩ	1
R47	ERDS2TJ103	10 KΩ	1
R48	ERDS2TJ333	33 KΩ	1
R49	ERDS2TJ473	47 KΩ	1
R50	ERDS2TJ103	10 KΩ	1
CAPACITORS			
○ C1	ECKR1E473ZV	0.047μF	1
C2	ECEA1CU100	10μF, 16 V	1
○ C3	ECKR1E473ZV	0.047μF	1
Ⓚ C4	ECEA1CK220	22μF, 16 V	1
Ⓚ C5	ECEA1HK4R7	4.7μF, 50 V	1

■ CONTROL PANEL 2 CIRCUIT (CP 2)

Ref. No.	Part No.	Description	Per/Set
DIODES			
S D1	MA162A		1
D2	SWLG30A	LED (red), with Spacer	1
SWITCH			
	SSHG1037A	Switch, for Push Type	1
RESISTOR			
R1	ERDS2TJ331	330Ω	1

■ MEMORY PACK CONTROL (MPC)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGTC40H374	Octal D-Type Flip-Flops	1
TRANSISTORS			
Q1	2SA1015GR		1
Q2	2SC2320LFG		1
RESISTORS			
R1	ERDS2TJ223	22 KΩ	1
R2	ERDS2TJ823	82 KΩ	1
R3	ERDS2TJ103	10 KΩ	1
CAPACITOR			
○ C1	ECKR1E473ZV	0.047μF	1

■ JACK CIRCUIT (JACK)

Ref. No.	Part No.	Description	Per/Set
JACK			
J1	SJJG100A	Headphones Jack	1
COIL			
L1	SLQG16W33A	16μH	1
RESISTORS			
Ⓕ R1, 2 ⚠	ERD25FJ680	68Ω, 1/4 W	2
CAPACITORS			
○ C1~3	ECKR1E473ZV	0.047μF	3

■ MANUAL KEYBOARD 1 (MKB 1)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGM74LS138	Decoder	1
DIODES			
S D13~49	MA162A	Switching	37
CAPACITOR			
○ C1	ECKR1E473ZV	0.047μF	1
SWITCHES			
	SSPG6001A	Rubber Switch (6 continuous)	5
	SSPG7001A	Rubber Switch (7 continuous)	1

■ MANUAL KEYBOARD 3 (MKB 3)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGM74LS138	Decoder	1
DIODES			
S D1~24	MA162A	Switching	24
SWITCHES			
	SSPG6001A	Rubber Switch (6 continuous)	4
CAPACITOR			
○ C1	ECKR1E473ZV	0.047μF	1

■ POWER SUPPLY CIRCUIT (PS)

Ref. No.	Part No.	Description	Per/Set
INTEGRATED CIRCUIT			
IC1	SVIGM51207L	Dual Comparator	1
TRANSISTORS			
Q1	2SB945QP		1
Q2, 5	2SA933STRS		2
Q3, 6, 7	2SC2320LFG		3
Q4	2SB953AQP		1
DIODES			
D1, 2 ⚠	SVDGSM1A02LF	Rectifier	2
D3, 4 ⚠	SVDS2V20	Rectifier	2
D5	MA4051M	Zener	1
D6, 7	MA165TA5VT		2
D8	SVDD3S4M		1
D9	SVDGRK14		1
COILS			
L1	SLTGLF3	Line Filter	1
L2	SLCG2A121T	120μH	1
L2 EZ	SLCG2A121TZ	120μH, [EZ] only	1
L3	SLCG1A121T	120μH	1
L4 EZ	SLQG10W2D1	10μH, [EZ] only	1
FUSES			
F1 ⚠	XBA2C16TB0	T 1.6A, 250V Except for [MC]	1
F2, 3 ⚠	XBA2C08TB0	T 800mA, 250V	2
F4 ⚠	XBA2C20TB0	T 2A, 250V	1
F5 ⚠	XBA2C05TB0	T 500mA, 250V	1
F1 MC ⚠	XBA1F16NU14	1.6A, 125V [MC] only	1
F4 MC ⚠	XBA1F20NU14	2A, 125V	1
F5 MC ⚠	XBA1F05NU14	500mA, 125V	1
JACK			
J1	SJJG310A	AC Inlet	1
J1 MC	SJJG320A	AC Inlet, [MC] only	1
RESISTORS			
R1～3	ERDS2TJ472	4.7KΩ	3
R4	ERDS2TJ102	1KΩ	1
R5	ERDS2TJ101	100Ω	1
R6, 7	ERDS2TJ472	4.7KΩ	2
R8	ERDS2TJ103	10KΩ	1
R9	ERDS2TJ472	4.7KΩ	1
Ⓕ R10 ⚠	ERX2ANJR22	0.22Ω, 2W	1
R11	ERDS2TJ331	330Ω	1
R12, 13	ERDS2TJ101	100Ω	2
R14	ERDS2TJ332	3.3KΩ	1
R15	ERDS2TJ101	100Ω	1
R16	ERDS2TJ222	2.2KΩ	1
Ⓕ R17 ⚠	ERD50FJ331	330Ω, 1/2W	1
R18	ERDS2TJ471	470Ω	1
R19	ERDS2TJ562	5.6KΩ	1
R20	ERDS2TJ222	2.2KΩ	1
Ⓕ R21 ⚠	ERX1ANJPR47	0.47Ω, 1W	1
R22, 23	ERDS2TJ101	100Ω	2
Ⓕ R24 ⚠	ERD25FJ331	330Ω, 1/4W	1
R25	ERDS2TJ153	15KΩ	1

Ref. No.	Part No.	Description	Per/Set
CAPACITORS			
C1 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the-Line Capacitor	1
○ C2 ⚠	ECKCVA1472MF	4700PF, Line Capacitor	1
C3 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the-Line Capacitor	1
C4	ECEA1CU101	100μF, 16V	1
C5	ECEA1CU100	10μF, 16V	1
C6	ECEA1VU222	2200μF, 35V	1
○ C7	ECCR1H331J	330PF	1
C8	ECEA1CU100	10μF, 16V	1
C9	ECEA1VU331	330μF, 35V	1
C10	ECQM1H103KV	0.01μF	1
○ C11	ECKR1E473ZV	0.047μF	1
○ C12	ECCR1H331J	330PF	1
C13	ECQM1H103KV	0.01μF	1
C14	ECEA1CU331	330μF, 16V	1
○ C15	ECKR1E473ZV	0.047μF	1

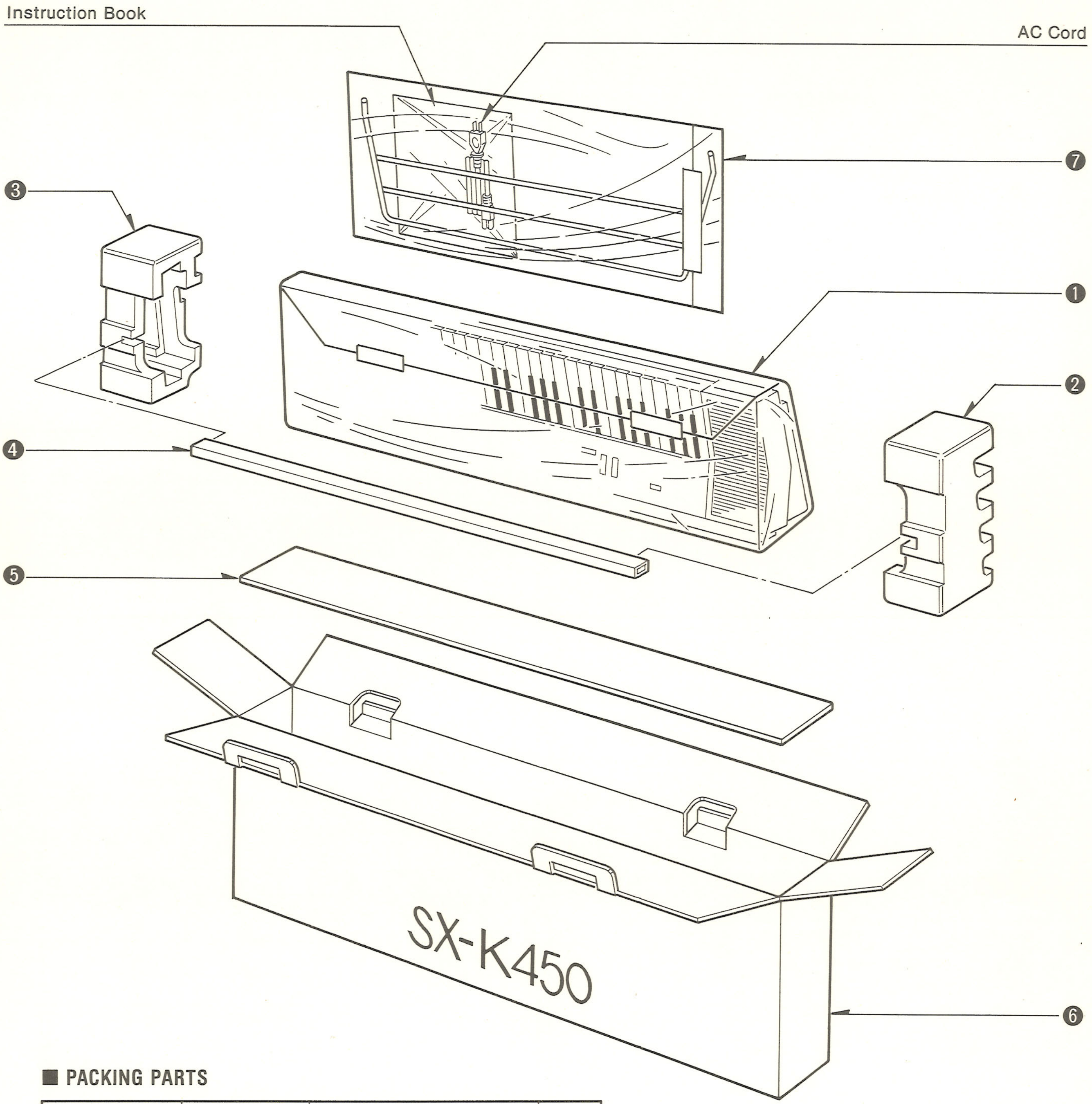
■ WIRING PARTS (See wiring connection diagram on page 22, 23)

Ref. No.	Part No.	Description	Per/Set
	SWKG0358LSA	Connector, with Wire	1
○	SWKG0473ZA	Connector, with Wire	1
○	SWKG0474STA	Connector, with Wire	1
○	SWKG0521ZA	Connector, with Wire	1
	SWKG0656STA	Connector, with Wire	1
	SWKG0657ZA	Connector, with Wire	1
	SWKG0863LSA	Connector, with Wire	1
	SWKG0866LTA	Connector, with Wire	1
	SWKG1042LSA	Connector, with Wire	1
	SWKG1320LSA	Connector, with Wire	1
○	SWKG1324LSA	Connector, with Wire	1
	WHA0815AA	Wire	1
	WHA1020AA	Wire	1
	SWEG330A	Wire, with Terminal	2

■ DIGITAL MEMORY PACK

Ref. No.	Part No.	Description	Per/Set
SY-P2			
	SXPG12241	Memory Pack P.C.B.	1
IC1, 2	SVIGM512820R	16K Bit CMOS Static RAM	2
D1	MA165TA5VT	Diode	1
Z1, 2	EXBEQ10104MM	Block Resistor, 100KΩ×10	2
SW1, 2	SSSG1001A	Selector Switch	2
R1	ERDS2TJ103	Resistor, 10KΩ	1
R2～4	ERDS2TJ472	Resistor, 4.7KΩ	3
Ⓣ C1	ECSF35E1GE	Capacitor, 1μF, 35V	1
SY-P3			
	SXPG12242	Memory Pack P.C.B.	1
IC2	SVIG6264LP15	64K Bit CMOS Static RAM	1
D1	MA165TA5VT	Diode	1
Z1	EXBEQ10104MM	Block Resistor, 100KΩ×10	1
Z2	EXBEQ12104MM	Block Resistor, 100KΩ×12	1
SW1, 2	SSSG1001A	Selector Switch	2
R1	ERDS2TJ103	Resistor, 10KΩ	1
R2, 3	ERDS2TJ472	Resistor, 4.7KΩ	2
Ⓣ C1	ECSF35E1GE	Capacitor, 1μF, 35V	1

PACKING


Instruction Book
AC Cord
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SX-K450
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■ PACKING PARTS

Ref. No.	Part No.	Description	Per/Set
○	SPNGK450KEA	Packing Parts Assembly	1
○ 1	SPHG1200A	Protection Bag, for Cabinet	1
2	SPNG5521A	Pad, Left Side	1
3	SPNG5522A	Pad, Right Side	1
○ 4	SPNG1612A	Protection Bar, for Control Panel	1
○ 5	SPNG1611A	Pad, Bottom	1
○ 6	SPNG1609A	Carton Box	1
○ 7	SPHG1210A	Protection Bag, for Accessories	1